

KENWOOD
HI/FI STEREO COMPONENTS

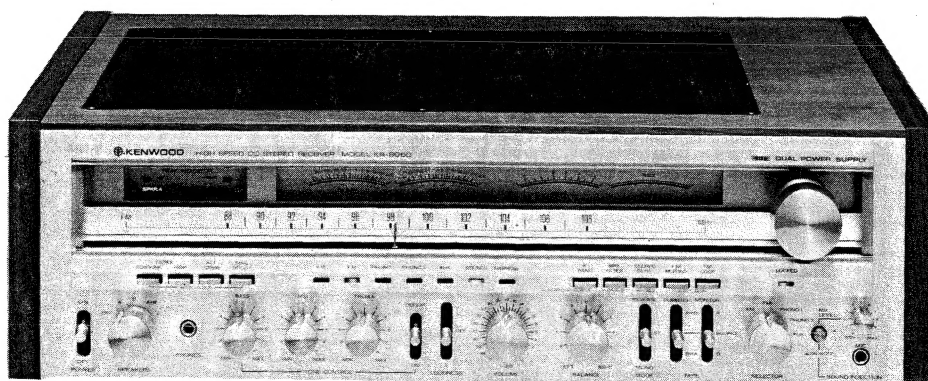
SERVICE MANUAL

KR-9050

An item of adjustment is written in three languages — English, French and German.

Un article sur réglages est écrit en trois langues, Anglais, Français et Allemand.

Ein Artikel der Abgleich wird auf drei Sprachen, Englische, Französisch und Deutsch geschrieben.



HIGH SPEED DC STEREO RECEIVER

CONTENTS

EXTERNAL VIEW..... 3

INTERNAL VIEW 4

DIAL CORD STRINGING 5

BLOCK AND LEVEL DIAGRAM..... 6

CIRCUIT DESCRIPTION 7

EXPLODED VIEW 8

DISASSEMBLY FOR REPAIR 9

ADJUSTMENT 10

RÉGLAGES 11

ABGLEICH 12

PC BOARD 14

SCHEMATIC DIAGRAM..... 19

PARTS LIST..... 20

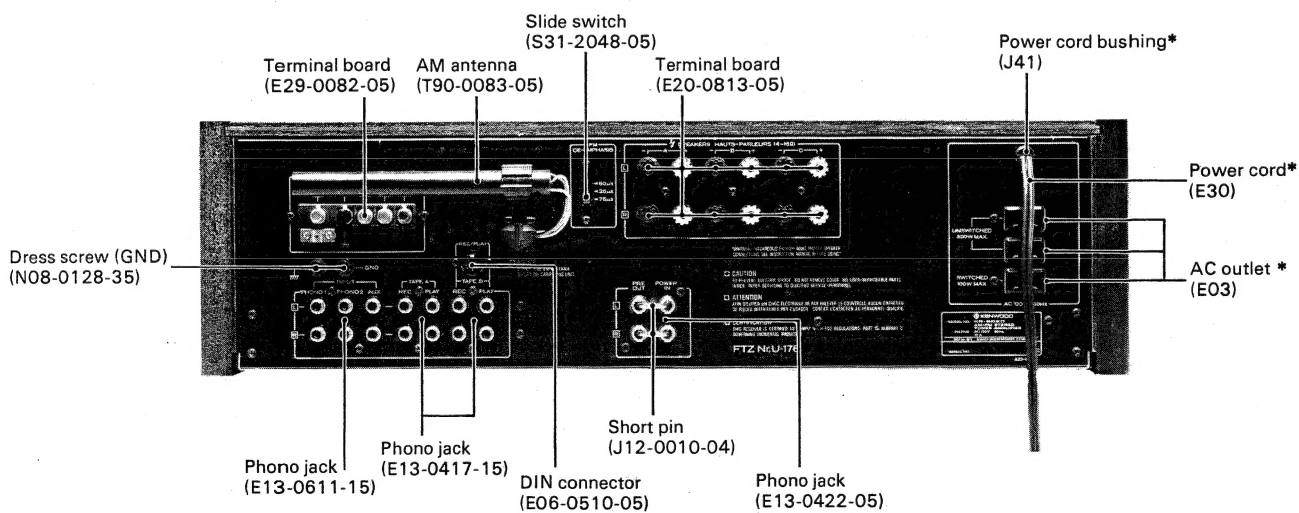
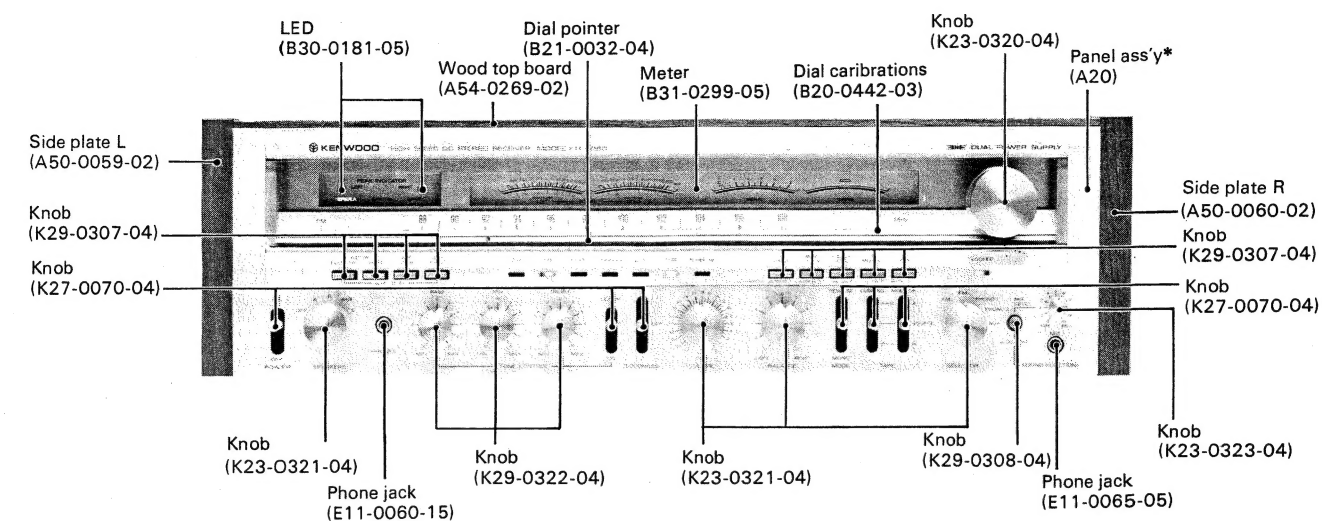
SEMICONDUCTOR SUBSTITUTIONS 22

Note:
Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the U.S. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

Region	Code
U.S.A.	K
Canada.....	P
PX.....	U
Australia.....	X
Europe.....	W
Scandinavia.....	L
England.....	T
South Africa.....	S
Other Areas.....	M

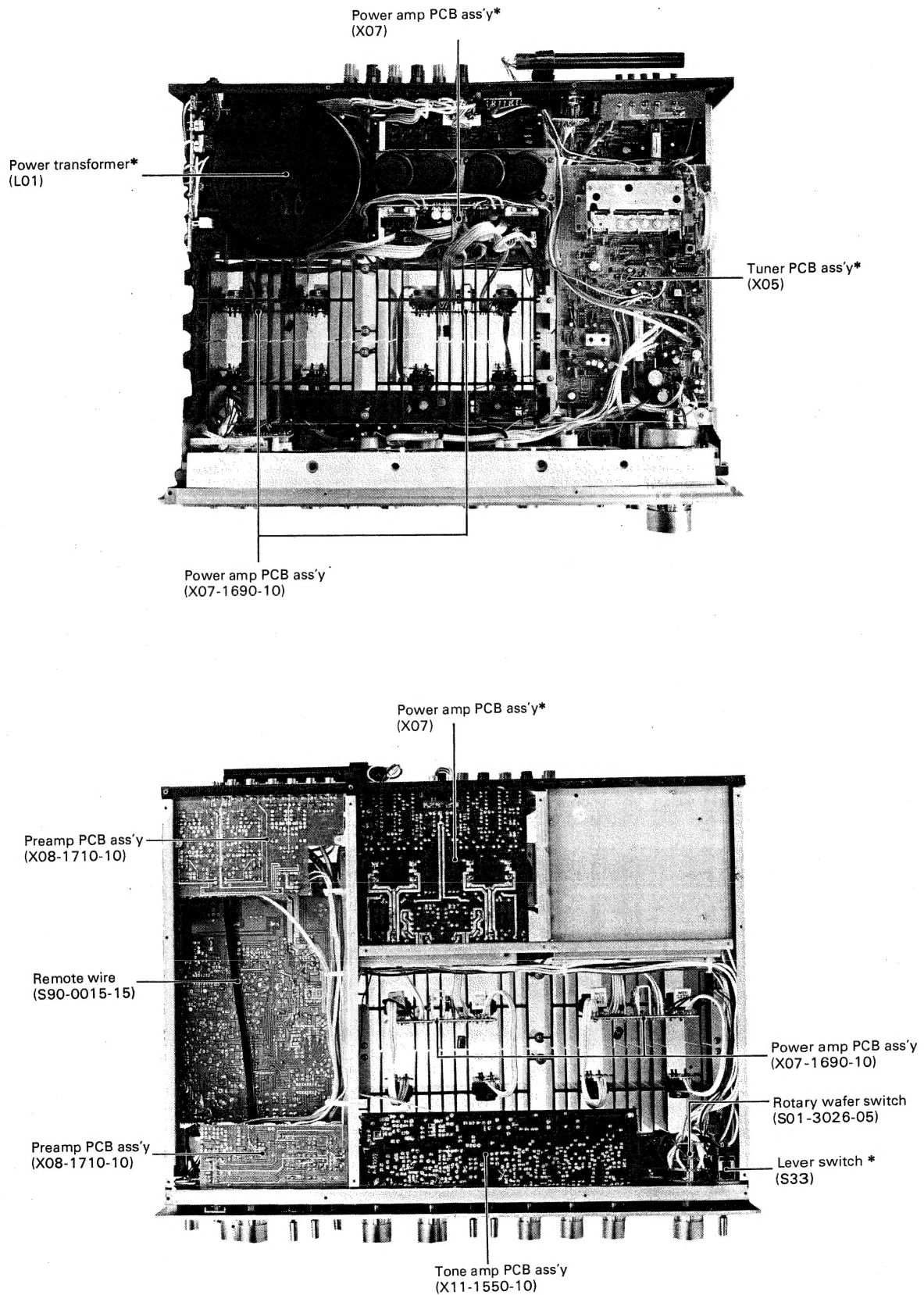
There is no plan for producing units of X and S types.

EXTERNAL VIEW



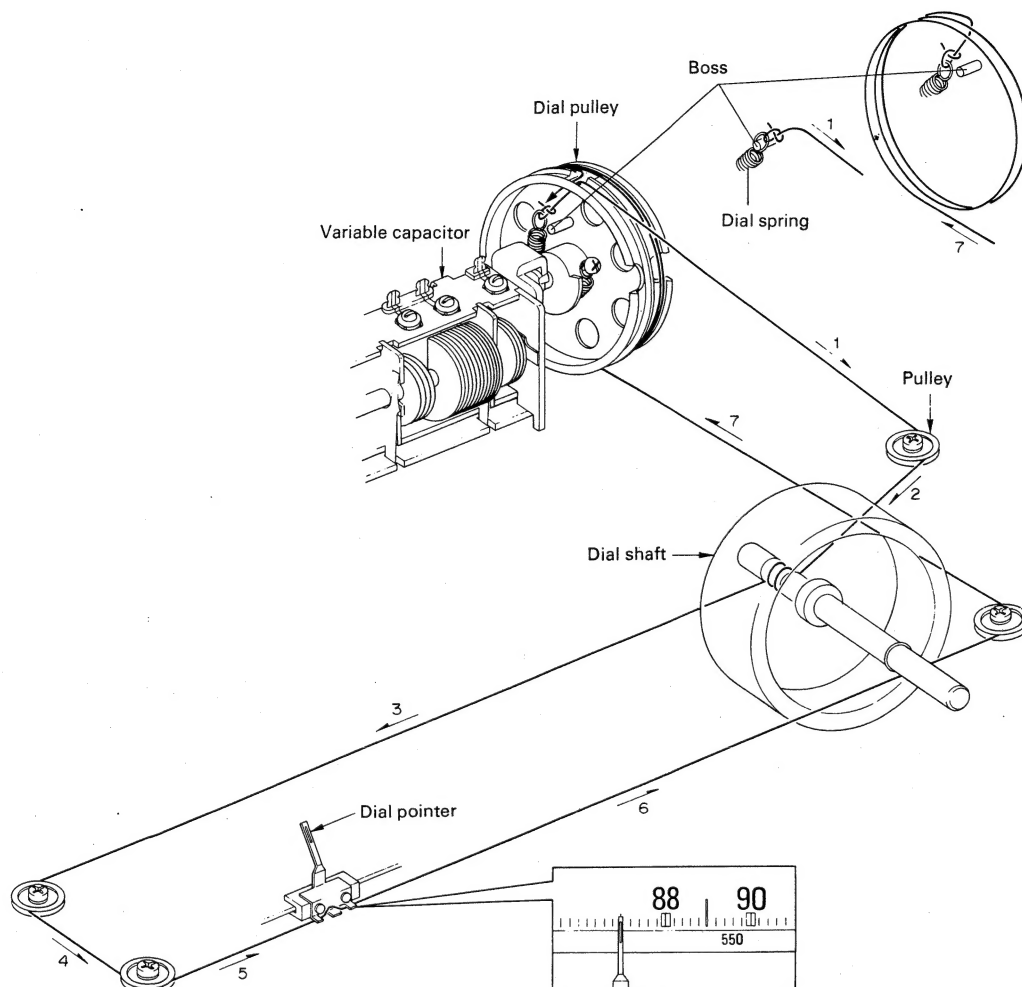
* Refer to parts list.

INTERNAL VIEW



* Refer to parts list.

DIAL CORD STRINGING

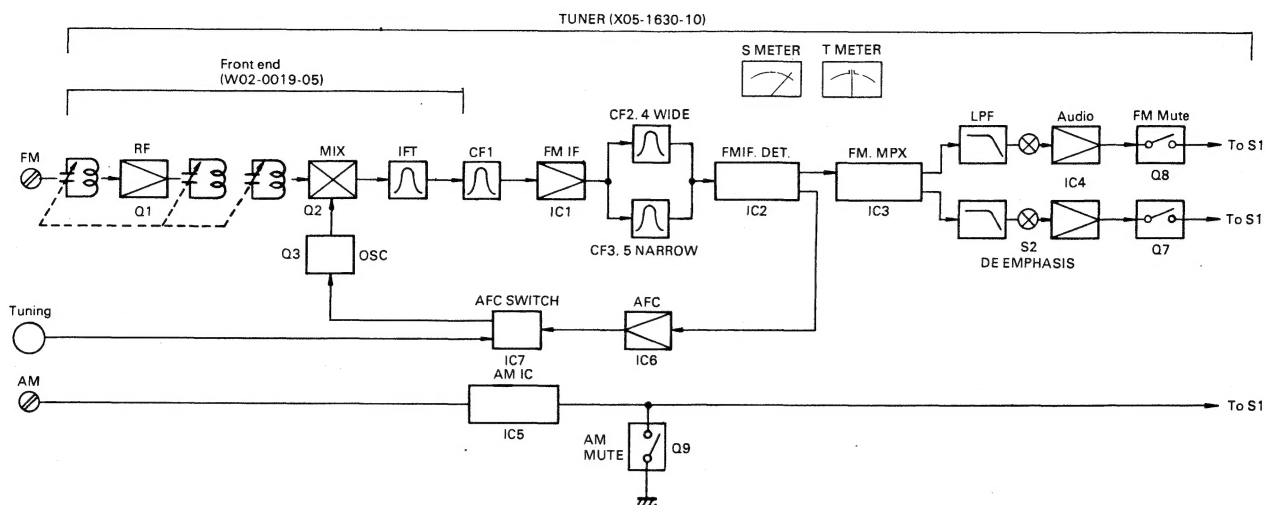


DIAL CORD STRINGING

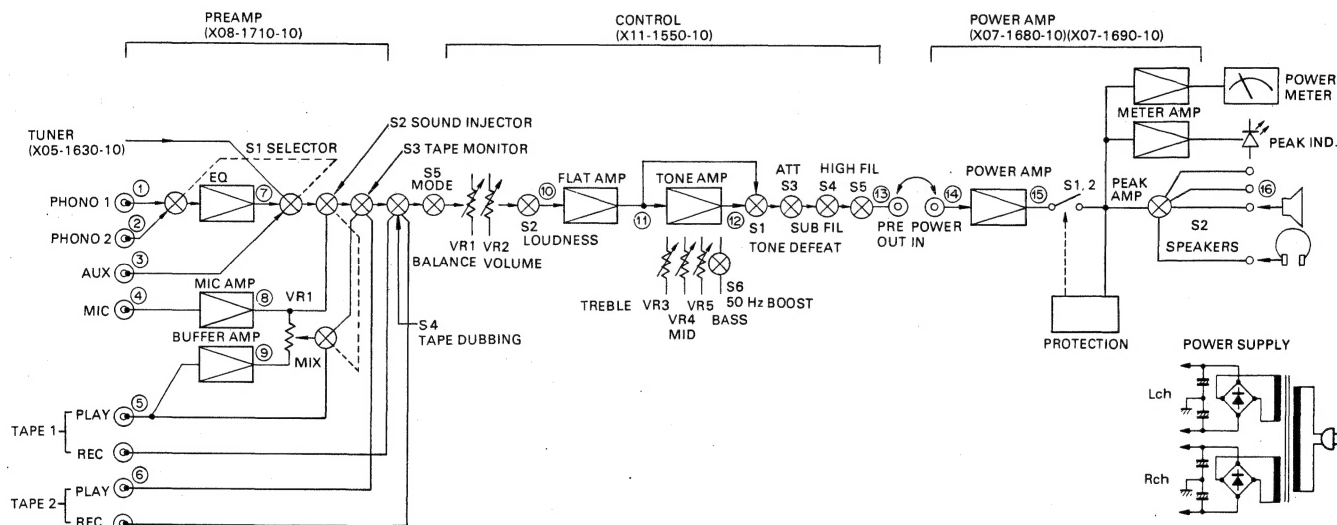
1. Fully open the variable capacitor.
2. Set the dial pulley as illustrated and fix it with a screw.
3. Tie the end of the dial cord at the dial spring, giving a margin of about 10 cm. Hook the spring on the boss.
4. Dress the dial cord in the direction of "1" to "2" and wind 2 turns around the dial shaft starting from its lower side.
5. Dress the dial cord in the direction of "3" through "7" and wind it 2 and a half turns around the dial pulley starting from its lower side.
6. Rigidly tie it with the margin cord and the dial spring (provided as described in 3, above) and release the dial spring from the boss.
7. Fully close the variable capacitor, then mount the dial pointer as illustrated.

BLOCK AND LEVEL DIAGRAM

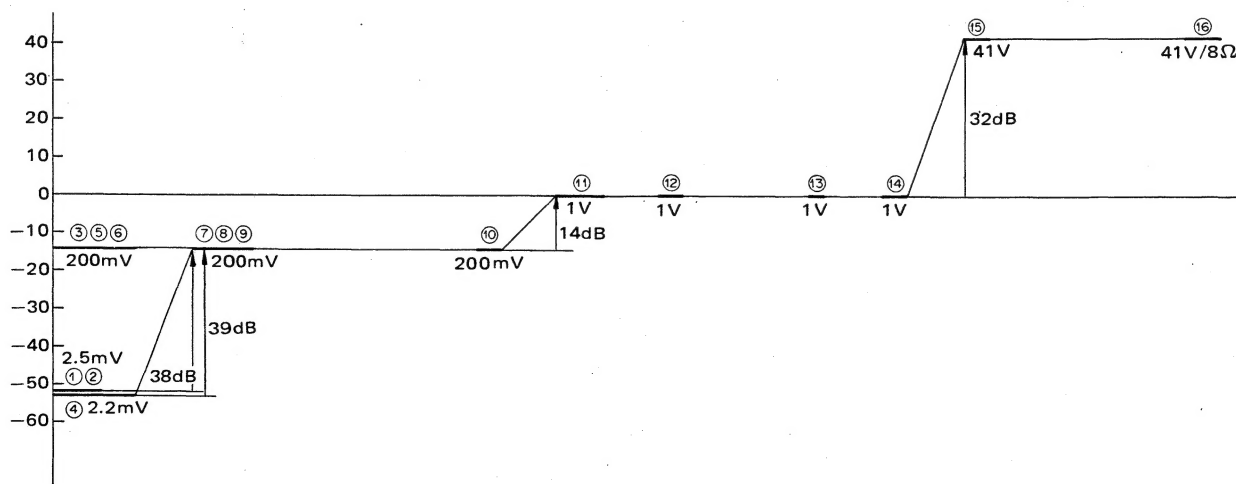
TUNER



AMP



LEVEL DIAGRAM



CIRCUIT DESCRIPTION

SOUND INJECTION

MIC and SOURCE mixing

If a single tape deck is used in your system it should be connected to the TAPE B jacks; the factory-installed U-shaped jumpers should be in place in the TAPE A jacks.

To mix mic and source signals, proceed as follows.

1. Turn the SOUND INJECTION switch on to activate sound injection. Select the desired source with the SELECTOR switch.
2. Set the TAPE DUBBING switch to A ▷ B and the TAPE MONITOR switch to A.
3. The sound heard from the speakers will be mic plus source. Adjust mic level for your preference by turning the SOUND INJECTION knob.
4. A recording of the mixed performance can be made with the tape deck connected to the B jacks.

Table 1 gives a summary of audio combinations at speaker and tape REC jacks for all applicable switch settings.

MIC and TAPE mixing

If two tape decks are incorporated into your system, you can mix mic audio with playback signals from tape deck A and record the mix on tape deck B.

For this operation the U-shaped jumpers should have been removed from the jacks marked TAPE A, and the second tape deck connected to these jacks.

1. Turn the SOUND INJECTION switch on to activate sound injection.
2. Set the TAPE DUBBING switch to A ▷ B and the TAPE MONITOR switch to A.
3. Play back the tape on tape deck A. The sound heard in the speakers will be the mic plus tape deck A playback.
4. Adjust mic level for your preference by turning the SOUND INJECTION knob.
5. A recording of the TAPE A playback with your added accompaniment can be recorded on tape deck B.

Table 2 gives a summary of audio combinations at speaker and tape jacks for all applicable switch settings.

Table 1 (With U-shaped jumpers)

SOUND INJECTION SWITCH	TAPE DUBBING SWITCH POSITION	TAPE MONITOR SWITCH POSITION	SPEAKER AUDIO	AUDIO TAPE A "REC" JACKS	AUDIO TAPE B "REC" JACKS	REFERENCE
"ON"	"SOURCE"	"SOURCE"	MIC AND SOURCE	SOUND SELECTED BY SELECTOR	SOUND SELECTED BY SELECTOR	MIXING VOLUME INOPERATIVE
		"A"	MIC AND SOURCE	SOUND SELECTED BY SELECTOR	SOUND SELECTED BY SELECTOR	
		"B"	TAPE B	SOUND SELECTED BY SELECTOR	SOUND SELECTED BY SELECTOR	
	"A ▷ B"	"SOURCE"	MIC AND SOURCE	SOUND SELECTED BY SELECTOR	MIC AND SOURCE	
		"A"	MIC AND SOURCE	SOUND SELECTED BY SELECTOR	MIC AND SOURCE	
		"B"	TAPE B	SOUND SELECTED BY SELECTOR	MIC AND SOURCE	

Table 2 (Without U-shaped jumpers)

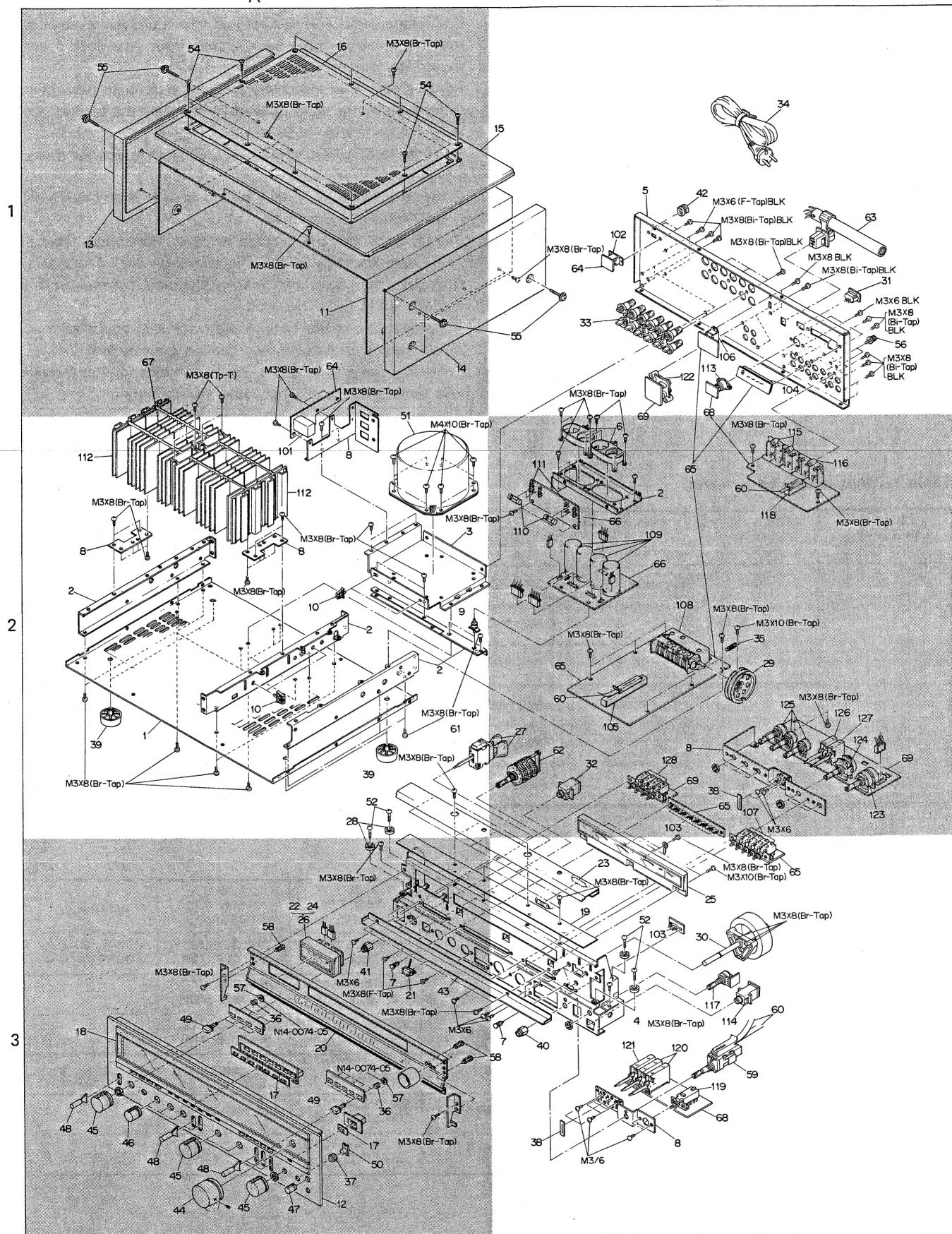
SOUND INJECTION SWITCH	TAPE DUBBING SWITCH POSITION	TAPE MONITOR SWITCH POSITION	SPEAKER AUDIO	AUDIO TAPE B "REC" JACKS	AUDIO REFERENCE JACKS	REFERENCE
"ON"	"SOURCE"	"SOURCE"	MIC ONLY	SOUND SELECTED BY SELECTOR	SOUND SELECTED BY SELECTOR	MIXING VOLUME INOPERATIVE
		"A"	MIC AND TAPE A	SOUND SELECTED BY SELECTOR	SOUND SELECTED BY SELECTOR	
		"B"	TAPE B	SOUND SELECTED BY SELECTOR	SOUND SELECTED BY SELECTOR	
	"A ▷ B"	"SOURCE"	MIC ONLY	SOUND SELECTED BY SELECTOR	MIC AND TAPE A	
		"A"	MIC AND TAPE A	SOUND SELECTED BY SELECTOR	MIC AND TAPE A	
		"B"	TAPE B	SOUND SELECTED BY SELECTOR	MIC AND TAPE A	

EXPLODED VIEW

See parts numbers on page 20.

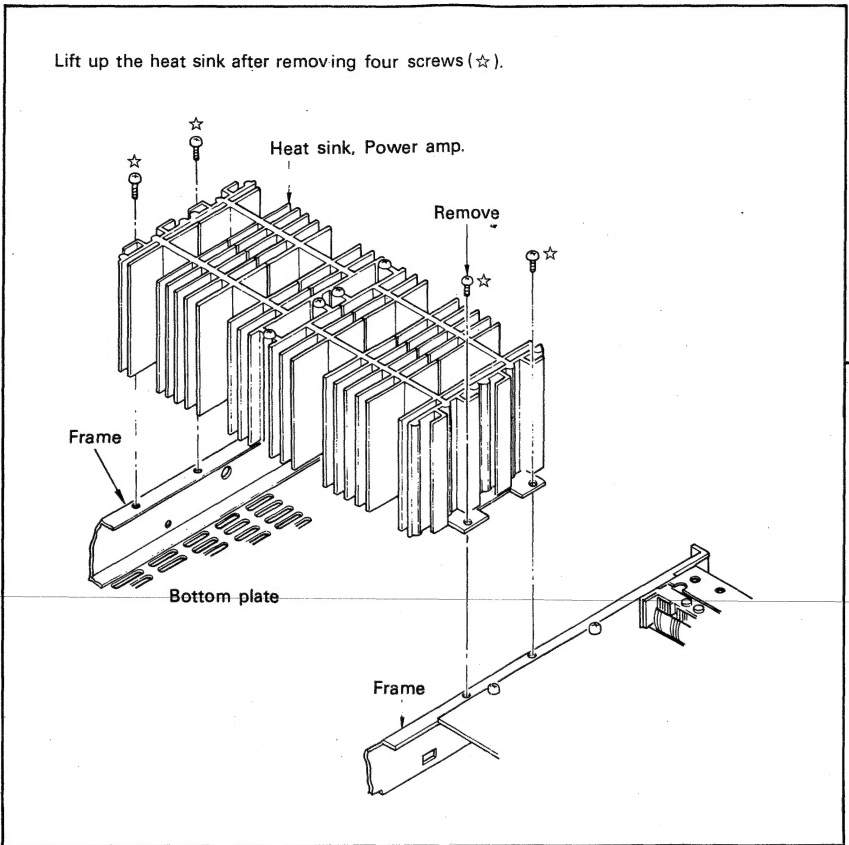
A

B

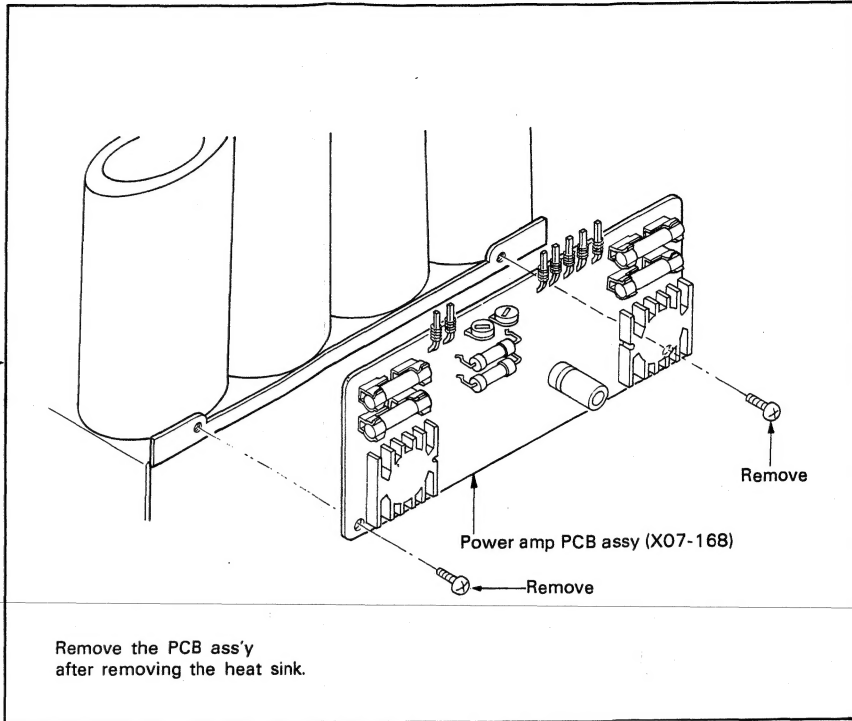


DISASSEMBLY FOR REPAIR

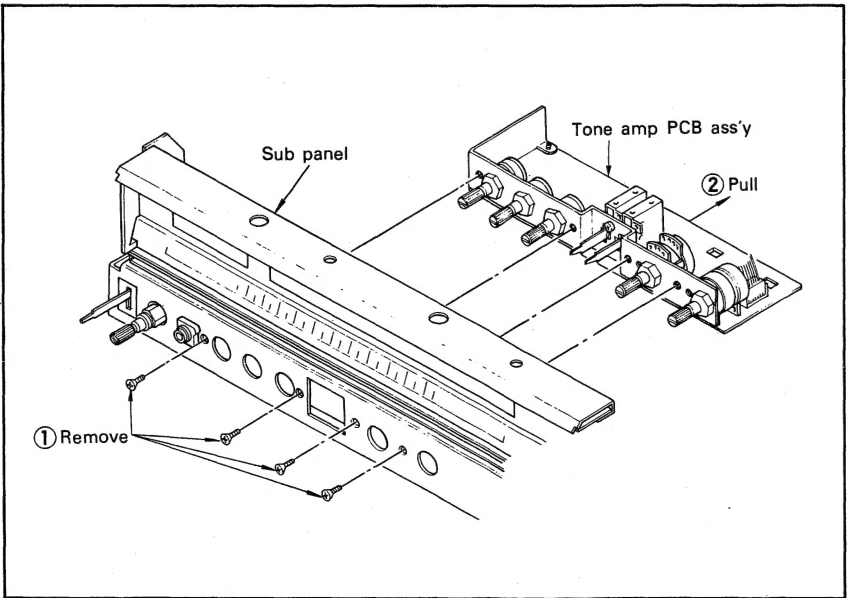
POWER AMP (X07-169)



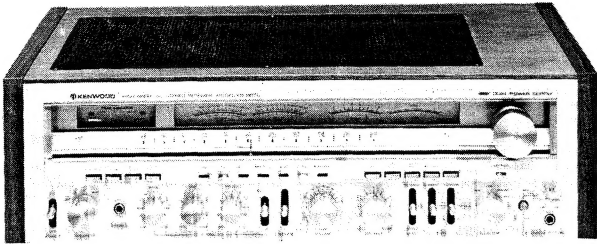
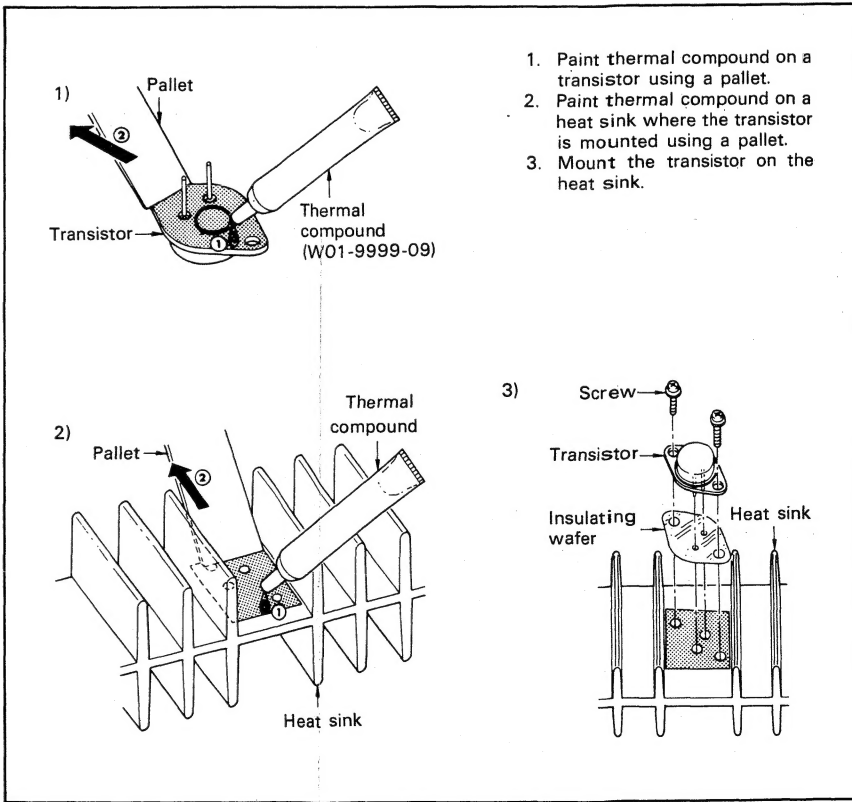
POWER AMP (X07-168)



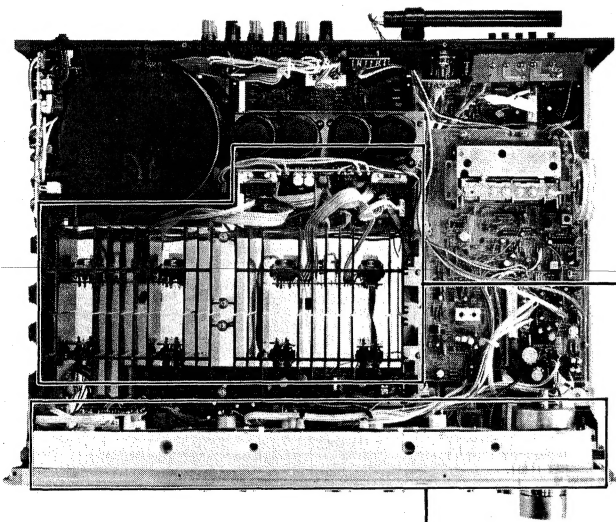
CONTROL AMP. ETC.



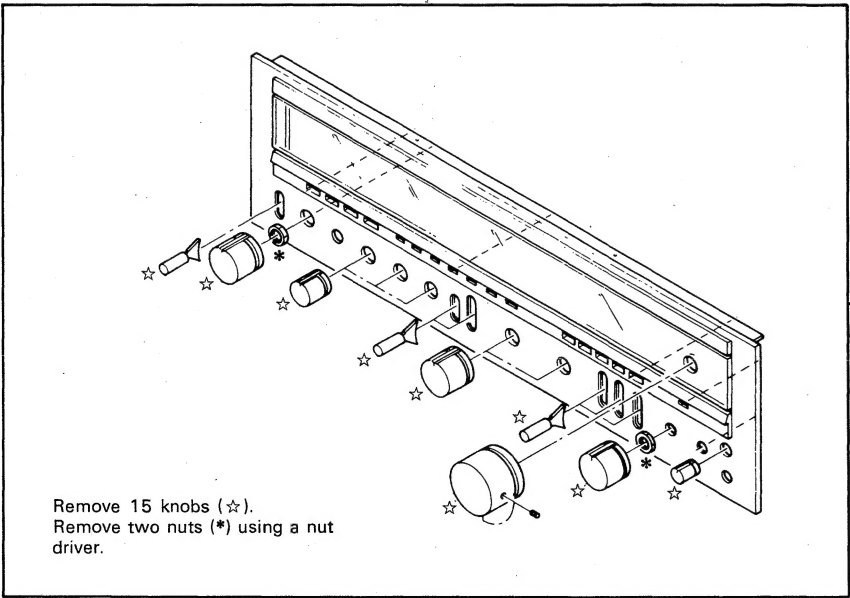
POWER TRANSISTOR



1. Remove the bottom plate.
2. Remove the side plate (L), (R) and the wood top board.
3. Remove the case. (Refer to EXPLODED VIEW)



REMOVE THE PANEL



ADJUSTMENT

INSTRUMENTS USED

AM signal generator..... AM-SG
FM signal generator..... FM-SG
Audio generator..... AG
Solid state voltmeter..... SSVM
FM multiplex generator..... FM-MPX
Oscilloscope
Frequency counter
Distortion meter

NOTES FOR ADJUSTMENT

- * The check points are shown on both circuit diagram and printed circuit board diagram.
- * 0 dB = 1 μV

NO.	ALIGN- MENT	TEST EQUIPMENTS		RECEIVER SETTING	OUTPUT SETTING	ADJUSTMENT POINTS	REMARKS
		CONNec- TION	SETTING				
FM SECTION							
①	DISCRI	—	—	FM ST. SENS 2 LOCK OFF IF WIDE TUNING: To a dead spot in the FM band	T meter	L5a	Meter indication in the center
②		A	95 MHz 60 dB (ANT.) 1 kHz (MOD.) 75 kHz (DEV.)	FM 95 MHz SENS 2 LOCK OFF IF WIDE	B	L5b	Minimum distortion
Repeat the alignments of 1 and 2 a few times.							
③	VCO	A	95 MHz 60 dB (ANT.) 0 (DEV.)	- ditto -	C Frequency coun- ter between R63 and GND via SSVM Note 1	VR3	Adjusted to 76 kHz ±200 Hz
④	19 kHz CANCEL	D	FM-MPX: PILOT SIGNAL FM-SG: 60 dB (ANT.)	-ditto -	SSVM to Pin 5 or Pin 6 of IC3	VR4	A compromise ad- justment may be required if left and right outputs are unequal.
⑤	SEPARATION	D	FM-MPX: SELECTOR L or R 1 kHz (MOD.) PILOT (6.75 kHz DEV.) FM-SG: 955 MHz 60 dB (ANT.) 68.25 kHz (DEV.)	- ditto -	B R out (SELECTOR→L) L out (SELECTOR→R)	VR5	A compromise ad- justment may be required if left-to- right and right- to-left separations are unequal.
⑥	IFT	D	FM-MPX: SELECTOR L + R 1 kHz (MOD.) PILOT (6.75 kHz DEV.) FM-SG: 95 MHz 60 dB (ANT) 68.25 kHz (DEV.)	- ditto -	B	IFT (Front end)	Minimum distortion. Adjust slightly.
⑦	STEREO BEACON	D	FM-MPX: SELECTOR L + R 1 kHz (MOD.) PILOT (6.75 kHz DEV) FM-SG: 95 MHz 20 dB (ANT) 68.25 kHz (DEV.)	FM 95 MHz SENS 1 LOCK OFF IF WIDE	STEREO INDICATOR (Front panel)	VR1	STEREO INDICATOR lights

NO.	ALIGN- MENT	TEST EQUIPMENTS		RECEIVER SETTING	OUTPUT SETTING	ADJUSTMENT POINTS	REMARKS
		CONNec- TION	SETTING				
AM SECTION							
1	IFT	E	1000 kHz 400 Hz 30% (MOD.)	AM 1000 kHz	B	L10	Maximum optimum waveform.
2	TRACKING	E	600 kHz 400 Hz 30% (MOD.)	AM 600 kHz	B	L9 Bar antenna	Maximum optimum waveform.
3			1400 kHz 400 Hz 30% (MOD.)	AM 1400 kHz		TCAM 1.2	
Repeat the alignments of 2 and 3 a few times.							
AUDIO SECTION							
I	OFFSET VOLTAGE	—	—	VOLUME to minimum position SPEAKERS B	F Lch (R-ch)	X07-1680 VR1 (VR2)	0V
II	BIAS CURRENT	—	—	VOLUME to minimum position	DC voltmeter between the emitters of Q7 and Q11 (Q8 and Q12) Note 2	X07-1690 VR1 (VR2)	20 mV
III	POWER METER	G	1 kHz 1V	TAPE B PLAY Adjust VOLUME so that SSVM indicates 4.9V SPEAKERS A	H POWER METER	X07-1680 VR3 (VR4)	SSVM 4.9V POWER METER 3W

REFERENCE: FM FRONT END

- The FM front end section is completely adjusted in the factory and further adjustment is not necessary.
When the transistor and/or FET are replaced, perform the following adjustment.
- (1) Set FM-SG to 108 MHz, 1 kHz Mod, ±75 kHz Dev. and connect it to the antenna terminal of the receiver.
 - (2) Set the dial pointer at 108 MHz.
 - (3) Adjust TCO so that T meter gives a mid-scale reading.
 - (4) Adjust TCA, TCR1 and TCR2 so that S meter deflects maximum.
- When the FM front end section cannot be repaired by replacing semiconductors and taking steps in "(1)~(4)", replace the front end (W02-0019-05) and do the following.
- (1) Set FM-SG to 90 MHz, 1 kHz Mod, ±75 kHz, 60 dB and connect it to the antenna terminal of the receiver.
 - (2) Receive the FM-SG signal.
 - (3) Fix the dial pointer at 90 MHz.
- * Repeat tracking adjustments 2 or 3 times and finally confirm the result using respective local stations.
 - * FM tracking on lower side cannot be adjusted since a fixed coil is employed.

RÉGLAGES

INSTRUMENTS USITE

Générateur MA..... AM-SG
Générateur MF..... FM-SG
Générateur Audio fréquences AG
Voltmètre à transistor SSVM
Générateur multiplex stéréo..... FM-MPX
Oscilloscope
Compteur de fréquence
Distorsiomètre

REMARQUES DE RÉGLAGES

- * Le point de contrôle est indiqué sur le schéma de montage et le tracé du circuit imprimé.
- * 0 dB = 1 µV

NO.	ALIGNEMENT	APPAREILLAGE		RÉGLAGE DU AMPLI-TUNER	INDICATEUR DE SORTIE	POINTS DE RÉGLAGE	REMARQUES
		RACCORDEMENT	RÉGLAGE				
SECTION MF							
①	INDICATEUR À ZÉRO CENTRAL	—	—	FM STEREO SENS: 2 LOCK: OFF IF: WIDE NOISE:	INDICATEUR A ZÉRO CENTRAL	L5	Aiguille de l'indicateur à zéro central en position centrale.
②	INDICATEUR À ZÉRO CENTRAL	A	96 MHz 1 kHz (Mod.) 75 kHz (Dev.) 60 dB (Ant.)	FM 95 MHz STEREO SENS: 2 LOCK: OFF IF: WIDE	B	L5	Distorsion minimale.
Répéter les points "1" et "2" plusieurs fois.							
③	VCO	A	95 MHz 0 (Dev.) 60 dB (Ant.)	idem	C Relier le comp- teur de fréquence a la resistance R63 par SSVM	VR3	oscillateur à 76 kHz ±200 Hz (Note 1)
④	Circuit suppression de signal -pilote	D	95 MHz SIGNAL PILOTE 60 dB (Ant.)	idem	Relier le SSVM à plot 5 et 6 de IC3	VR4	Si la sortie de la droit et la gauche ne sont pas mère, régler le potentiomètre ajustable pour que la tension de sortie est même.
⑤	SÉPARATION	D	95 MHz 1 kHz (Mod.) 68,25 kHz (Dev.) 60 dB (Ant.) 6,75 kHz (PILOTE) SELECTION (L ou R)	idem	B Sortie de droit (SELECTION: L) sortie de gauche (SELECTION: R)	VR5	Si la sortie la droit de diaphonie et la gauche ne sont pas même régler le potentiomètre ajustable pour que la tension de sortie est même.
⑥	TFI	D	95 MHz 1 kHz (Mod.) 68,25 kHz (Dev.) 60 dB (Ant.) 6,75 kHz (PILOTE) SELECTION (L + R)	idem	B	TFI	Distorsion minimale.
⑦	INDICATEUR DE STÉRÉO	D	95 MHz 1 kHz (Mod.) 68,25 kHz (Dev.) 20 dB (Ant.) 6,75 kHz (PILOTE) SELECTION (L + R)	FM 95 MHz SENS: 1 LOCK: OFF IF: WIDE	INDICATEUR DE STÉRÉO	VR1	INDICATEUR DE STÉRÉO Luit

NO.	ALIGNEMENT	APPAREILLAGE		RÉGLAGE DU AMPLI-TUNER	INDICATEUR DE SORTIE	POINTS DE RÉGLAGE	REMARQUES
		RACCORDEMENT	RÉGLAGE				
SECTION MA							
1	TFI	Ⓔ	1000 kHz 4000 Hz, 30% (Mod.)	AM 1000 kHz	Ⓔ	L10	Déviati on maximale.
2	ALIGNEMENT	idem	600 kHz 400 Hz, 30% (Mod.)	AM 600 kHz	idem	L9 Antenne ferrite MA	Déviati on maximale
3	ALIGNEMENT	idem	1400 kHz 400 Hz, 30% (Mod.)	AM 1400 kHz	idem	TCAM 1,2	Déviati on maximale.
Répéter les 2 et 3 plusieurs fois.							
SECTION AMPLI							
I	TENSION DE DÉCALAGE	—	—	VOLUME: minimale SPEAKERS: B	Ⓕ	VR1, 2 (X07-1680)	0V
II	COURANT DE POLARISATION	—	—	idem	Bracher le volt- mètre c.c. aux émetteur de Q7 et Q11 (Q9 et Q12) (Note 2)	VR1, 2 (X07-1690)	20 mV
III	POWER MÈTRE	Ⓖ	1 kHz 1V	Regler le VOLUME en sortie que. Le VU mètre indique 3W lorsque le volt- mètre indique 4,9V	Ⓖ POWER MÈTRE	VR3, 4 (X07-1680)	3W

REFERENCE: PARTIE FRONTALE FM

- La partie frontale FM a été parfaitement réglée en usine et aucun réglage supplémentaire n'est requis.
- Si l'on remplace le transistor et/ou FET, il convient d'effectuer le réglage suivant:
- (1) Régler FM-SG sur 108 MHz, 1 kHz Mod, ±75 kHz Dev et le connecter à la borne d'antenne du ampli-tuner.
 - (2) Mettre l'aiguille du cadran à 108 MHz.
 - (3) Régler TCO de façon que l'indicateur à ZERO CENTRAL donne une lecture à mi-échelle.
 - (4) Ajuster TCA, TCR1 et TCR2 de façon que l'indicateur de champ dévie au maximum.
- Si la partie frontale FM ne peut pas être réparée en remplaçant les semi-conducteurs et en procédant suivant les indications dans (1)~(4), remplacer l'assemblage PCB de la partie frontale (W02-0019-05) et effectuer les opérations suivantes:
- (1) Régler FM-SG à 90 MHz, 1 kHz Mod, ±75 kHz, 60 dB et le connecter à la borne d'antenne du récepteur.
 - (2) Recevoir le signal FM-SG.
 - (3) Fixer l'aiguille du cadran à 90 MHz.

- * Renouveler plusieurs fois le réglage de reproduction et confirmer la réception de l'émission.
- * Comme on utilise une bobine fixée, l'alignement sur band latérale inferieure n'est pas possible.

ABGLEICH

PRÜFEINRICHTUNGEN

MW-Signalgenerator	AM-SG
UKW-Signalgenerator	FM-SG
NF-Signalgenerator	AG
Transistor-Voltmeter	SSVM
Multiplex-Signalgenerator	FM-MPX

Oszilloskop
Frequenzzähler
Klirrfactormesser

HINWEISE

- * Der Prüfpunkt (TP) ist im Schaltplan auf geführt.
- * 0 dB = 1 µV

NR.	ABGLEICH	PRÜFEINRICHTUNG		STEUERGERÄT EINSTELLUNG	AUSGANGS- ANZEIGE	EINSTELL- PUNKT	BEMERKUN- GEN
		AN- SCHLÜSSE	EINSTELLUNG				
UKW-EMPfangSABTEILUNG							
①	DISKRIMI- NATOR (1)	—	—	SELECTOR: FM STEREO SENS: 2 FM LOCK: OFF IF BAND: WIDE Abstimmung: zu einem toten Freck im UKW-Bereich.	Kanalmitten- Anzeiger	L5a	Den Zeiger des Kanalmitten- Anzeiger mitting einstellen.
②	DISKRIMI- NATOR (2)	A	95 MHz 60 dB (Steuergerät- Eingengesep) 1 kHz, ±75 kHz Hub	SELECTOR: FM STEREO SENS: 2 FM LOCK: OFF IF BAND: WIDE Abstimmung: 95 MHz	B	L5b	Minimaler Klirrfaktor
Abstimmungen „1 und 2“ mehrere Male niederholen.							
③	SPANNUNGS- GEREGELTER OSZILLATOR	A	95 MHz 60 dB (Steuergerät- Eingangspegel) 0 Hub	SELECTOR: FM STEREO SENS: 2 FM LOCK: OFF IF BAND: WIDE Abstimmung: 95 MHz	C Frequenzzähler Zwischen R63 und GND via SSVM	VR3	76 kHz ±200 Hz
④	PILOTTON- UNTER- DRÜCKUNG	D	95 MHz 60 dB (Steuergerät- Eingangspegel) Pilotton	- dito -	Gleichspannungs- messer zu Klemme 5 von IC3	VR4	Eine Kompromiß- einstellung wird gefordert wenn Ausschlag von den rechten und linken Kanäle ungleich sind.
⑤	STEREO KANAL TRENNUNG	- dito -	95 MHz 60 dB (Steuergerät- Eingangspegel) 1 kHz, ±68,25 kHz Hub Wähler: Loder R Pilotton (±6,75 kHz Hub)	- dito -	B R-Aus (Wähler: L) L-Aus (Wähler: R)	VR5	Eine Kompromiß- einstellung wird gefordert wenn dem Übersprech- anteil des linken kanals in den rechten kanal und dem Über- sprechanteil des rechten kanals in den linken kanal ungleich sind.
⑥	ZF-T	- dito -	95 MHz 60 dB (Steuergerät- Eingangspegel) 1 kHz, ±68,25 kHz Hub Wähler: L + R Pilotton: (±6,75 kHz Hub)	- dito -	B	ZF-T (Frontende)	Minimaler Klirr faktor, Schwacher Einstellung
⑦	STEREO INDIKATOR	- dito -	95 MHz 20 dB (Steuergerät- Eingangspegel) 1 kHz, ±68,25 kHz Hub Wähler: L + R Pilotton (±6,75 kHz Hub)	SELECTOR: FM STEREO SENS: 1 FM LOCK: OFF IF BAND: WIDE Abstimmung:	INDIKATOR	VR1	STEREO INDIKATOR aufleuchtet.

NR.	ABGLEICH	PRÜFEINRICHTUNG		STEUERGERÄT EINSTELLUNG	AUSGANGS- ANZEIGE	EINSTELL- PUNKT	BEMERKUN- GEN
		AN- SCHLÜSSE	EINSTELLUNG				
MW-EMPFANGSABTELUNG							
1	ZF-T	Ⓔ	1.000 kHz 400 Hz, 30% Mod.	SELECTOR: AM Abstimmung: 1.000 kHz	Ⓑ	L10	Maximaler Ausschlag
2	EMPFANGS- BEREICH (1)	- dito -	600 kHz 400 Hz, 30% Mod.	SELECTOR: AM Abstimmung: 600 kHz	- dito -	L9 MW- Ferritantenna	- dito -
3	EMPFANGS- BEREICH (2)	- dito -	1.400 kHz 400 Hz, 30% Mod.	SELECTOR: AM Abstimmung: 1.400 kHz	- dito -	TCAM1, 2	- dito -
Abstimmungen „2 und 3“ mehrere Male wiederholen.							
VERSTÄRKER							
I	OFFSET- SPANNUNG	—	—	VOLUME zu Stellung „∞“	Ⓕ L-Kanal (R-Kanal)	X07-1680 VR1 (VR2)	0V
II	LEERLAUFS	—	—	- dito -	Gleichspannungs- messer Zwischen den Emitter- Elektroden von Q8 und Q11. (Q8 und Q12) Siehe Bemerkung 1.	X07-1690 VR1 (VR2)	20 mV
III	LEISTUNGS- MESSER	Ⓖ	1 kHz 1V	Den VOLUME so regulieren, daß die Gleichspannungs- messer- Ablesung 4,9V ist.	Ⓖ Leistungs- messer	X07-1680 VR3 (VR4)	3W

HINWEISE: UKW-Frontende.

Das UKW-Frontende wird bereits im Werk vollständig eingestellt. Weitere Einstellung ist daher nicht nötig. Bei Auswechseln des Transistors und/oder des FETs die Einstellung wie folgt vornehmen.

- (1) Den UKW-Signalgenerator auf 108 MHz, 1 kHz Modulation und ±75 kHz Hub einstellen und mit der Antennenklemme des Steuergeräts verbinden.
- (2) Den Skalenzeiger auf 108 MHz stellen.
- (3) TCO so einstellen, daß Kanalmitten-anzeiger in der Mitte ausschlägt.
- (4) TCA, TCR1 und TCR2 so einstellen, daß Feldstärkeinstrument das Maximum anzeigt.

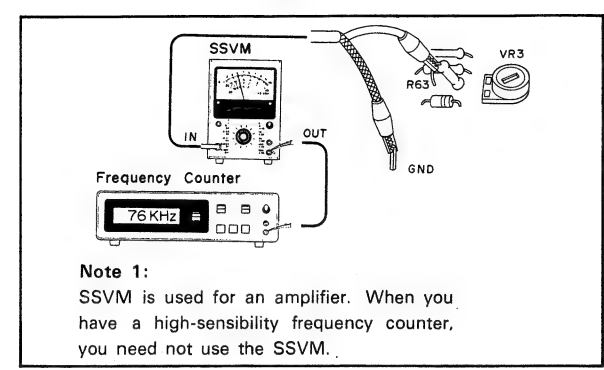
Wenn des UKW-Frontende durch Auswechseln der Halbleiter und/oder durch in Abschnitt „1 ~ 4“ genannten Schritte nicht repariert werden kann, ist die Leiterplatte (W02-0019-05) des Frontendes auszuschleichen und folgende Einstellung vorzunehmen.

- (1) Den UKW-Signalgenerator auf 90 MHz, 1 kHz Modulation, ±75 kHz Hub, und 60 dB einstellen und mit der Antennenklemme des Steuergeräts verbinden.
- (2) Den Steuergeräts so einstellen, daß Meßsendersignal empfangen wird, während der Skalenzeiger auf 90 MHz zeigt.

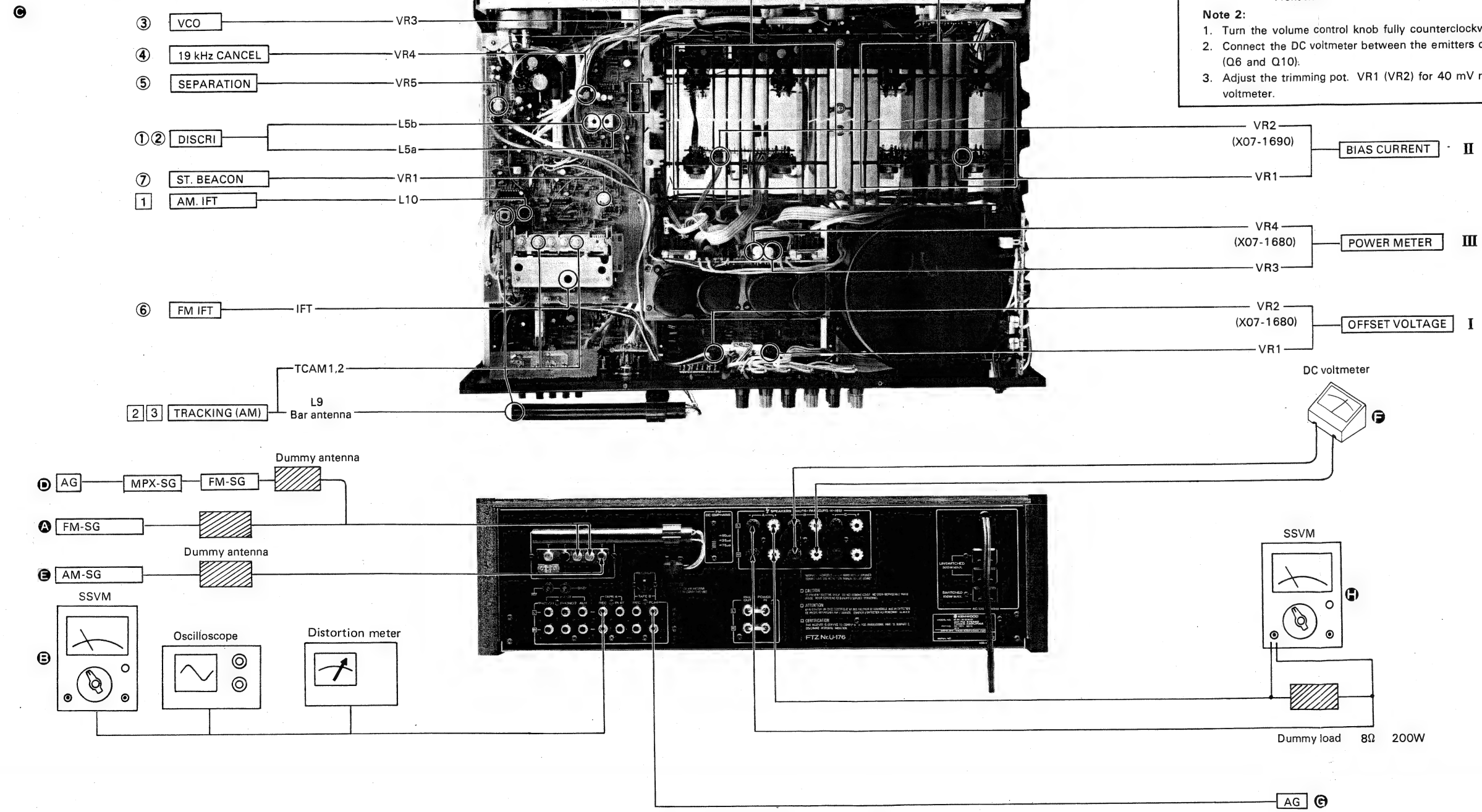
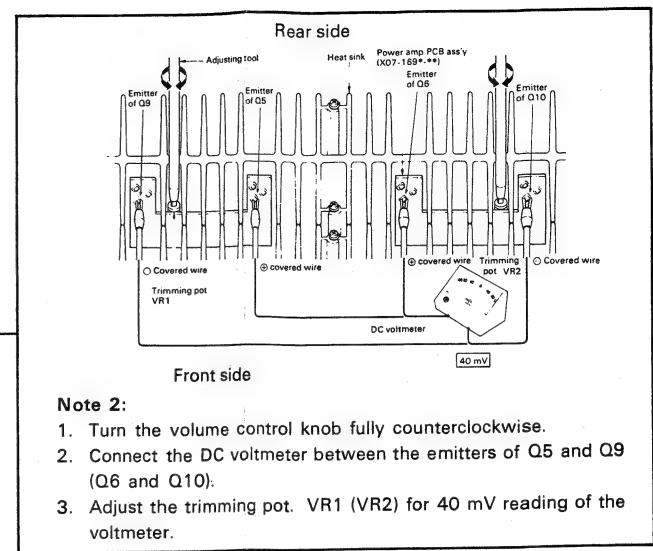
- * Den Empfangsbereich einige Male einstellen und den Empfang überprüfen.
- * Die UKW-Empfangsbereich auf der unteren Seite kann nicht geregelt werden, weil eine Festspule verwendet wird.

ADJUSTMENT

FM, AM SECTION

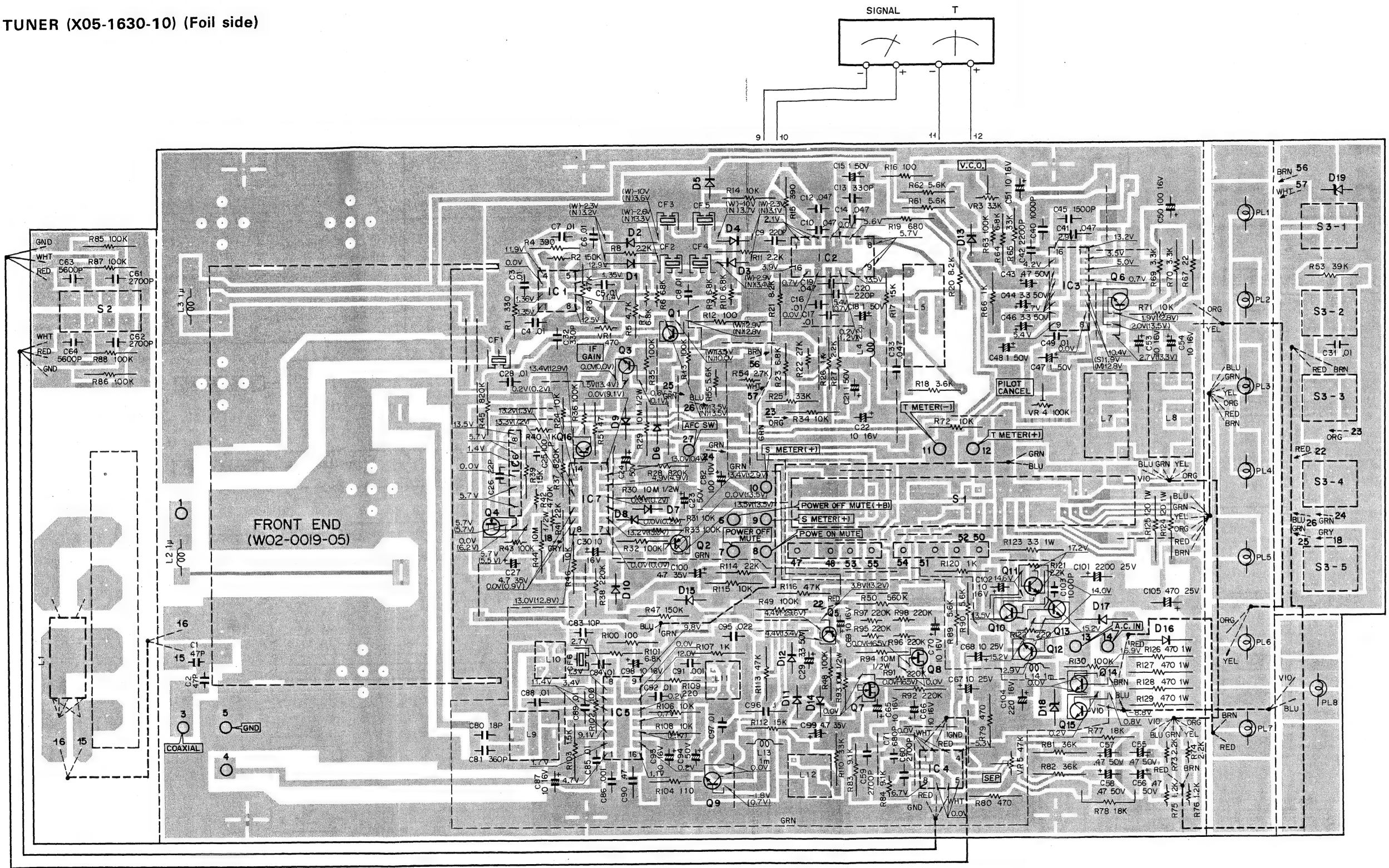


AUDIO SECTION



KR-9050 KR-9050
PC BOARD

▼ TUNER (X05-1630-10) (Foil side)

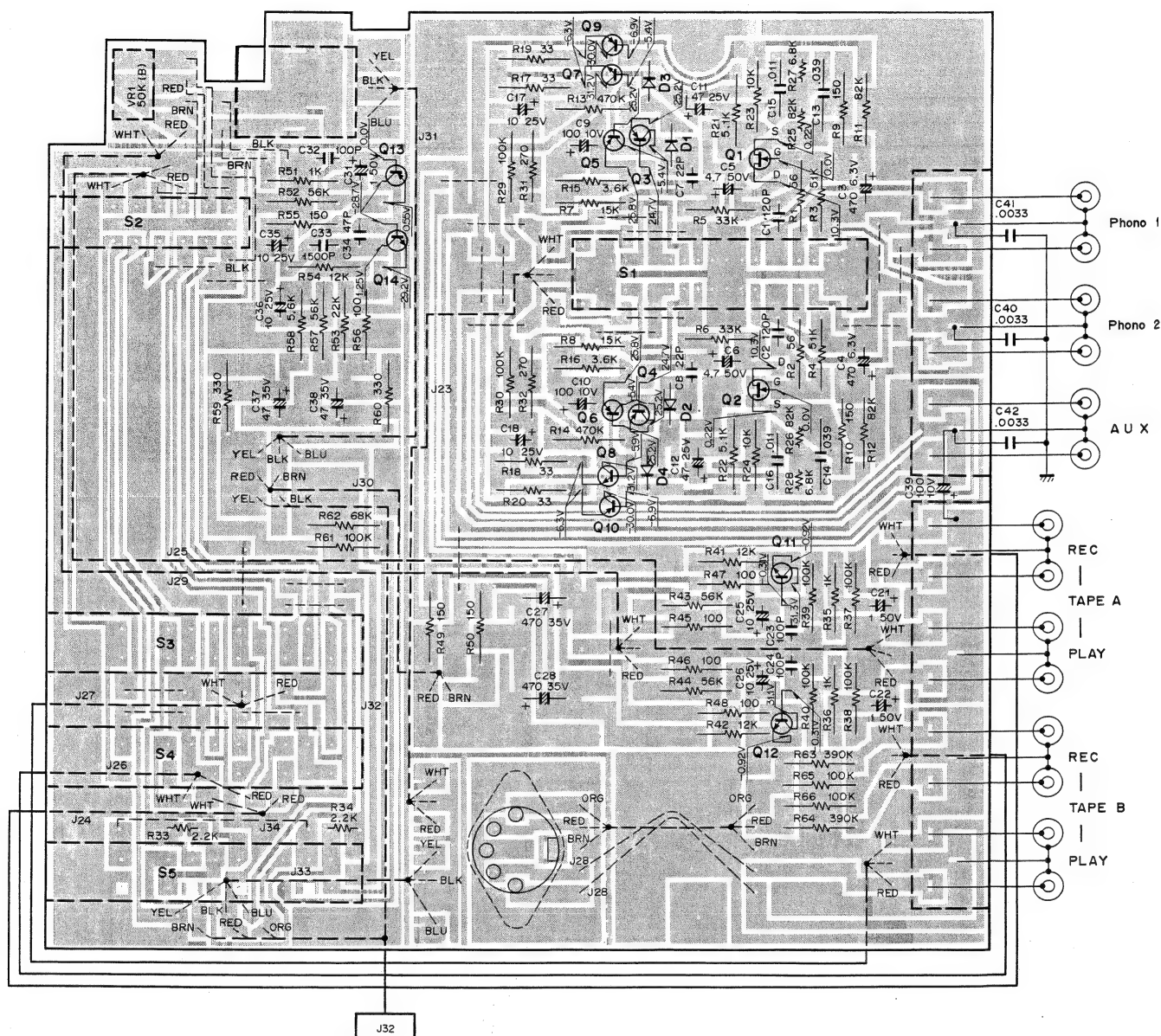


- LA1222 NJM4558D
- HA11225 HA11223W LA1240
- 2SA733A 2SC945 2SC1222
- 2SK117 2SK163
- 2SD330
- HA1457
- TC4069UBP MC14069UBCP

Q1,2,5:	2SA733A(Q,P)	Q14:	2SC1222(U)	IC1:	LA1222	IC7:	TC4069UBP or MC14069UBCP
Q3,6,9,10:		D1,2:	1N60	IC2:	HA11225		
12,13,15,16:	2SC945(Q,P,K)	D3~15:	1S1555 or 1S2076	IC3:	HA11223W		
Q4,7,8:	2SK163 or 2SK117 (Y,GR,BL)	D16,17:	W06B	IC4:	NUM4558D(A,B)		
Q11:	2SD330(E,F)	D18:	XZ-127	IC5:	LA1240 or HA1197		
		D19:	YZ-040B	IC6:	HA1457		

PC BOARD

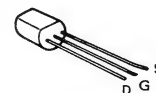
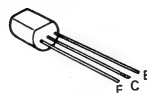
▼ PREAMP (X08-1710-10) (Foil side)



- Q1,2: 2SK163(K,L) or
2SK68A(L,M,N)
Q3~6,9,10: 2SB725(Q,R) or
2SA1023(P,K)
Q7,8: 2SD767(Q,R) or
2SC2378(P,K)
Q11,12,14: 2SC1845(F,E)
Q13: 2SA992(F,E)
D1~4: 1S2076 or
1S1555

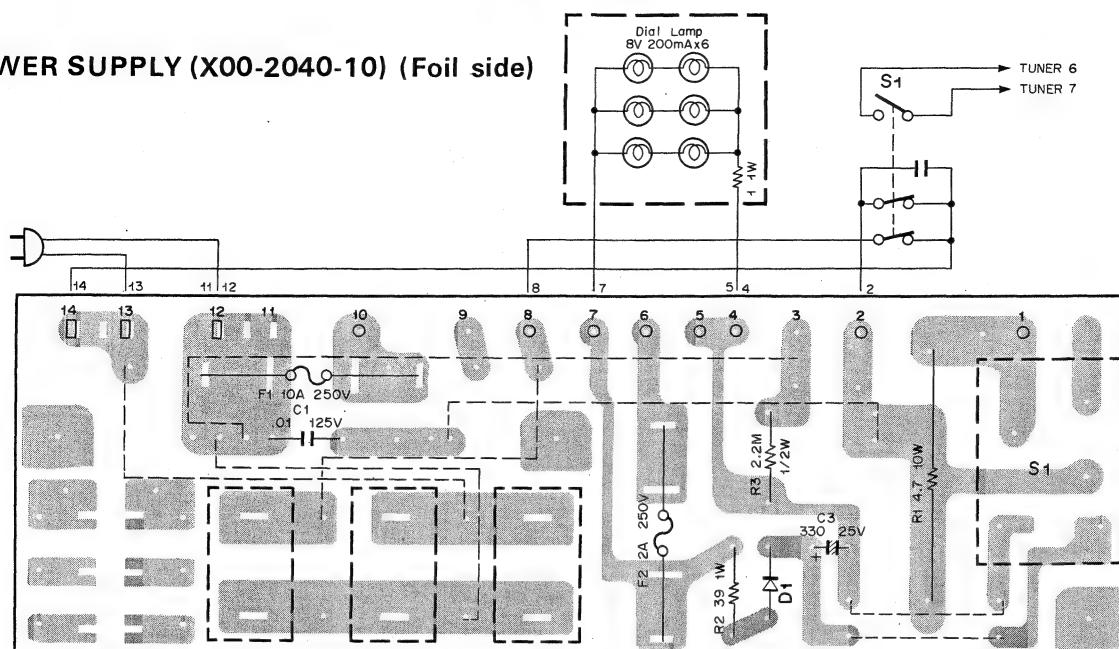
2SA992
2SA1023
2SB725
2SC1845
2SC2378
2SD767

2SK163
2SK68A

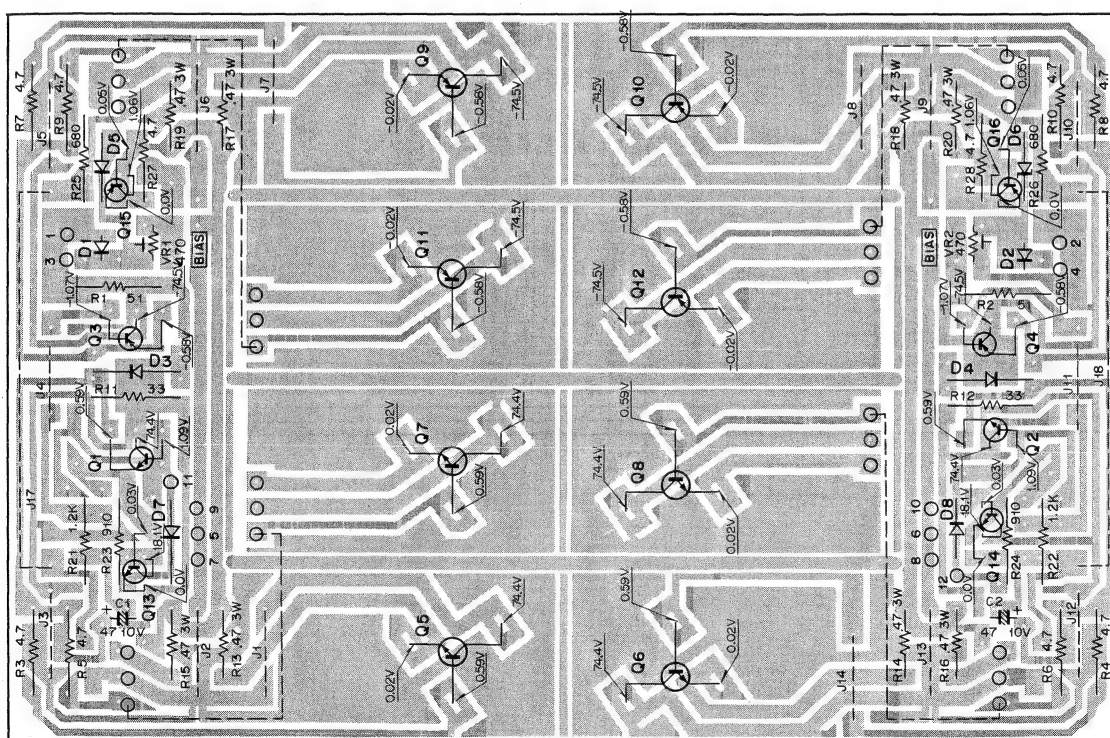


PC BOARD

▼ POWER SUPPLY (X00-2040-10) (Foil side)

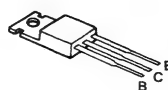


▼ POWER AMP (X07-1690-00) (Foil side)

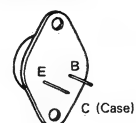


Q1,2:	2SD760(B,C)	Q15,16:	2SA733A(R,Q)
Q3,4:	2SB720(B,C)	D1,2:	STV-4H(W)
Q5~8:	2SC2607(O,Y)	D3,4,7,8:	1S2076A
Q9~12:	2SA1116(O,Y)	D5,6:	YZ-040B
Q13,14:	2SC1890(E,F)		

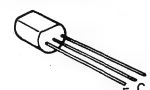
2SB720
2SD760



2SA1116
2SC2607

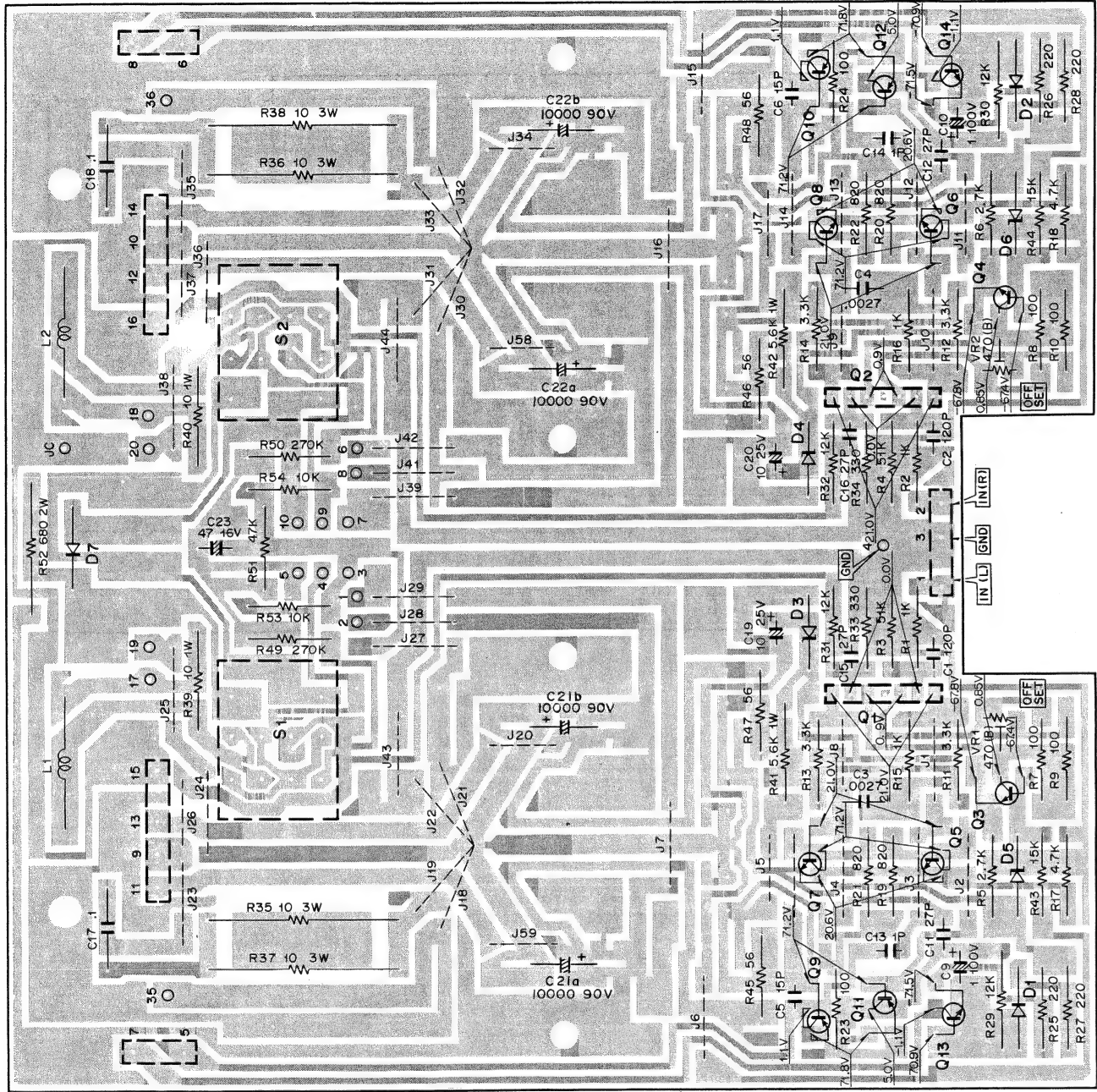


2SA733A
2SC1890

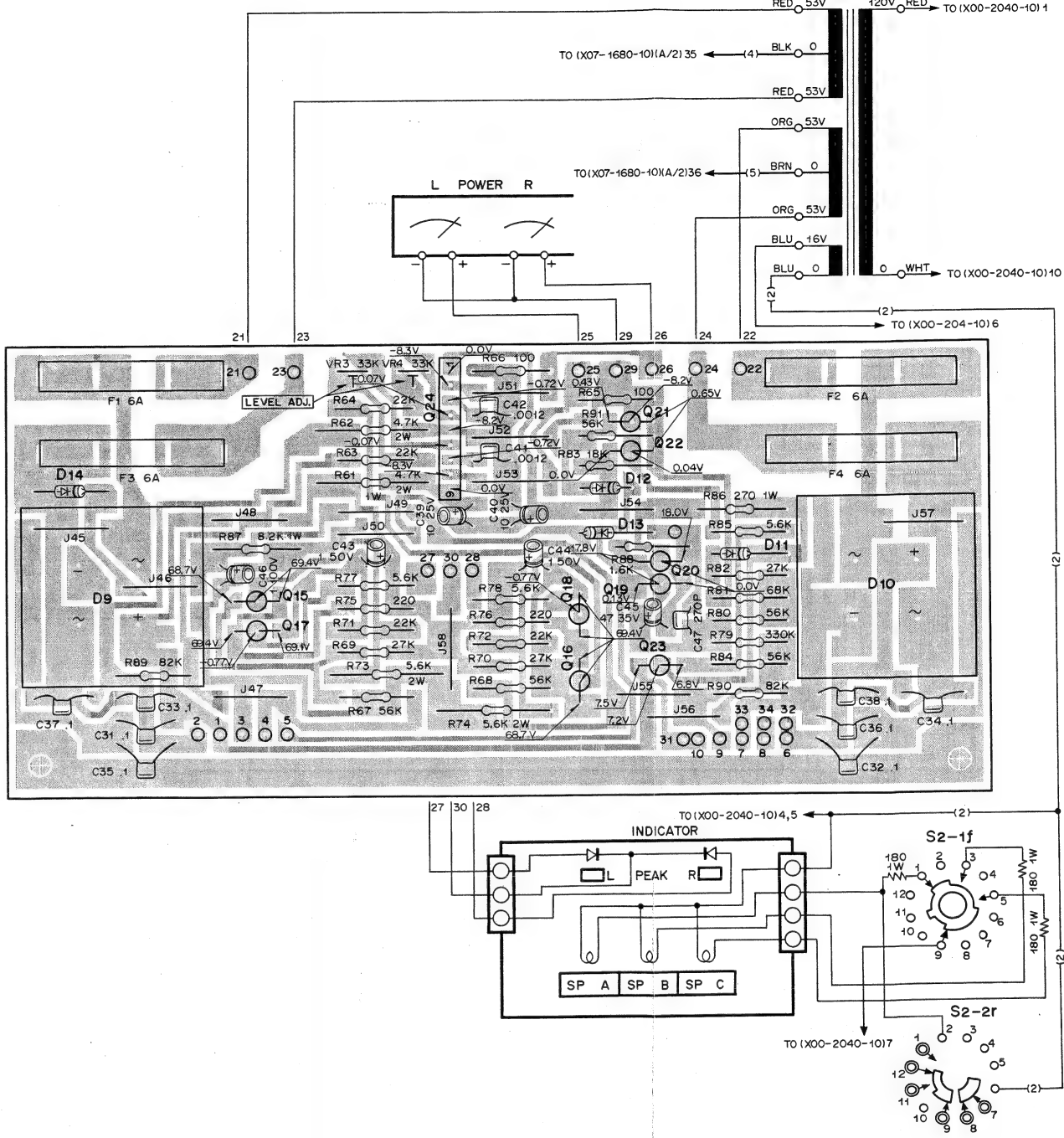


PC BOARD

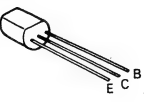
▼ POWER AMP (X07-1680-10) (A/2)(Foil side)



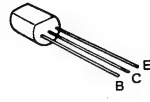
(B/2)(Component side)



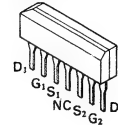
2SC1890A 2SA893
2SC1890 2SC945
2SA733A



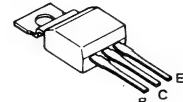
2SA850



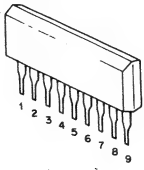
2SK150A
μPA68H



2SB718
2SD758



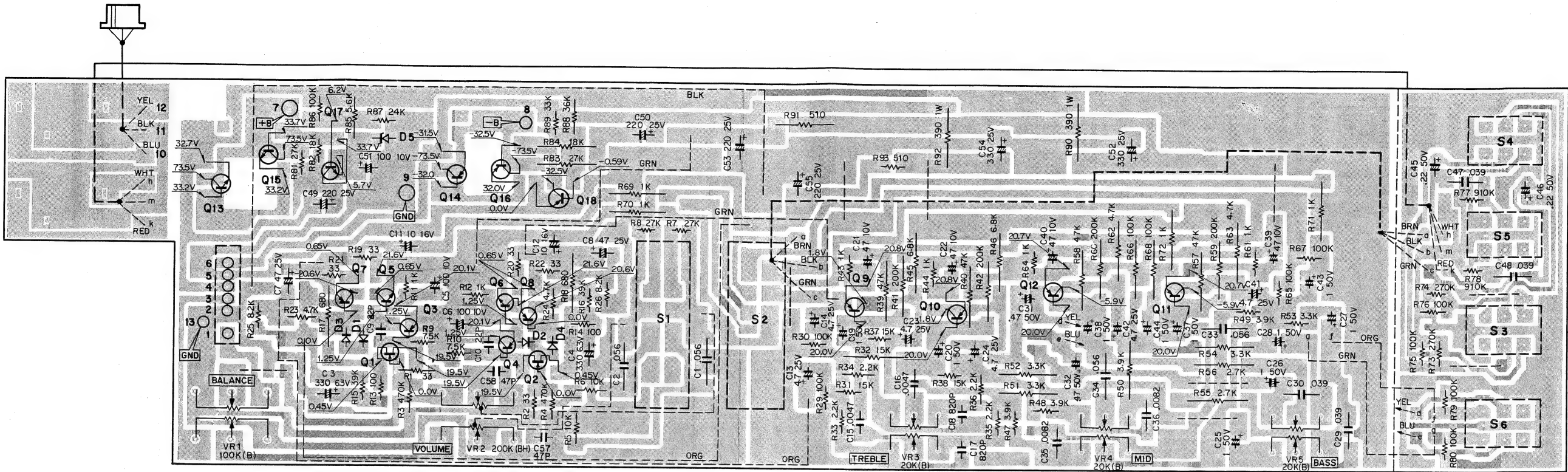
TA7318P



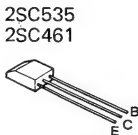
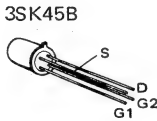
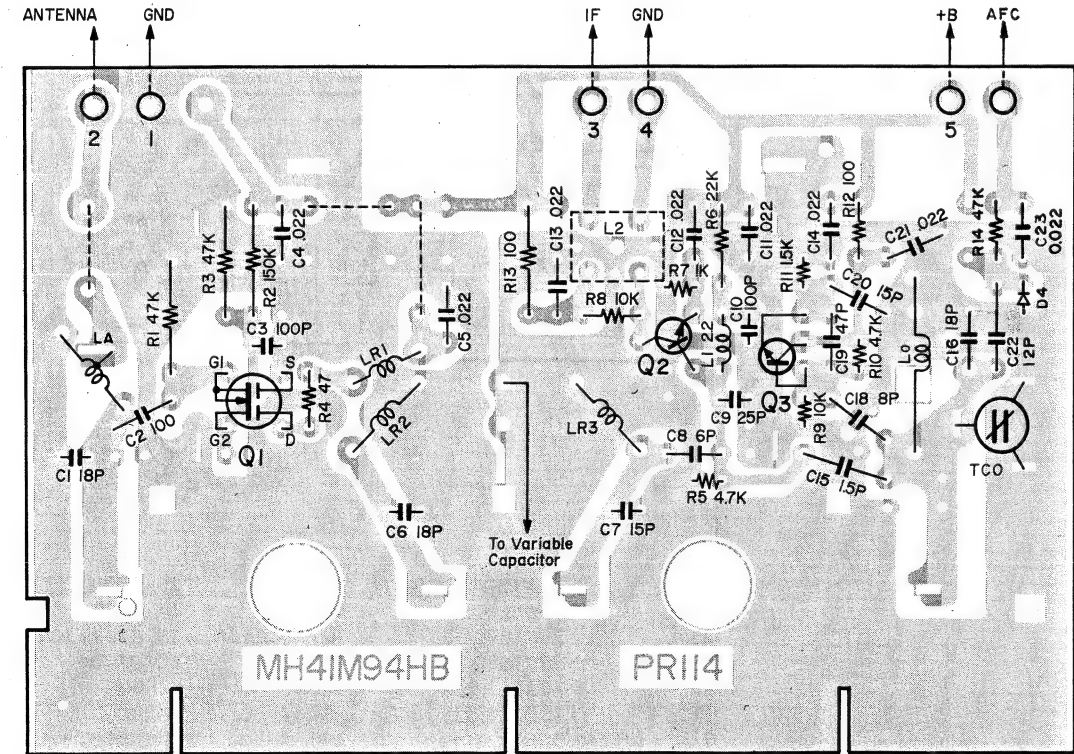
- | | | | |
|---------------|---------------------------------|-------------|------------------|
| Q1,2: | 2SK150A (GR,BL) or μPA68H (L,M) | Q23: | 2SA850(E) |
| Q3,4: | 2SC1890A(E,F) | Q24: | TA7318P |
| Q5~8,22: | 2SC1890(E,F) | D1,2,11,12: | 1S2076 or 1S1555 |
| Q9~12: | 2SB718(B,C) | D3,4: | EQA01-24 |
| Q13,14: | 2SD758(B,C) | D5,6: | XZ060 |
| Q15,16,20,21: | 2SA733(Q,R) | D7,14: | W06B |
| Q17,18: | 2SA893(E,F) | D9,10: | M4C-51-12*1 |
| Q19: | 2SC945(Q,R) | D13: | 1S2076A |

PC BOARD

▼ CONTROL (X11-1550-10) (Foil side)

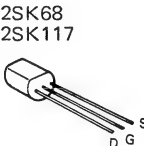
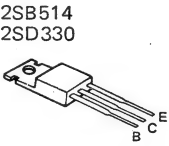
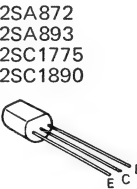


▼ FRONT END (W02-0019-05) (Foil side)



- Q1: 3SK45B
- Q2: 2SC535
- Q3: 2SC461B
- D1: 1S2236

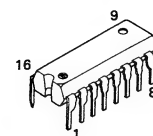
- Q1,2: 2SK68(M) or 2SK117(GR)
- Q3,4,7~12: 2SA872(E)
- Q5,6: 2SC1775(E)
- Q13: 2SD330
- Q14: 2SB514
- Q15,17: 2SC1890(E)
- Q16,18: 2SA893(E)
- D1~4: 1S1555
- D5: EQA01-06R



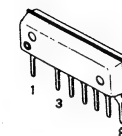
2SA640
2SA733A
2SA750
2SA777
2SA872
2SA893
2SA992
2SB725
2SC945
2SC1222

2SC1439
2SC1509
2SC1735
2SC1775
2SC1775A
2SC1890
2SC1980
2SC2008
2SC2089
2SD767

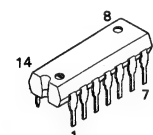
HA11223W
HA11225
HA11197
LA1240



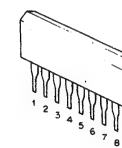
HA1457



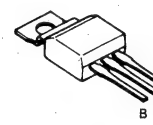
TC4069UBP
MC14069UBCP



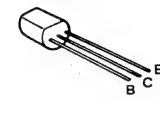
TA7318P



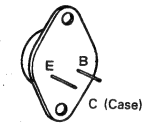
2SB718
2SD758



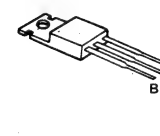
2SA794
2SA850



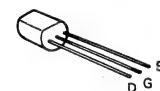
2SA1116
2SC2607



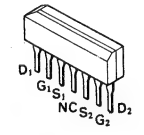
2SB507V-AL
2SB514
2SB720
2SC1419
2SD330
2SD313V-AL
2SD760



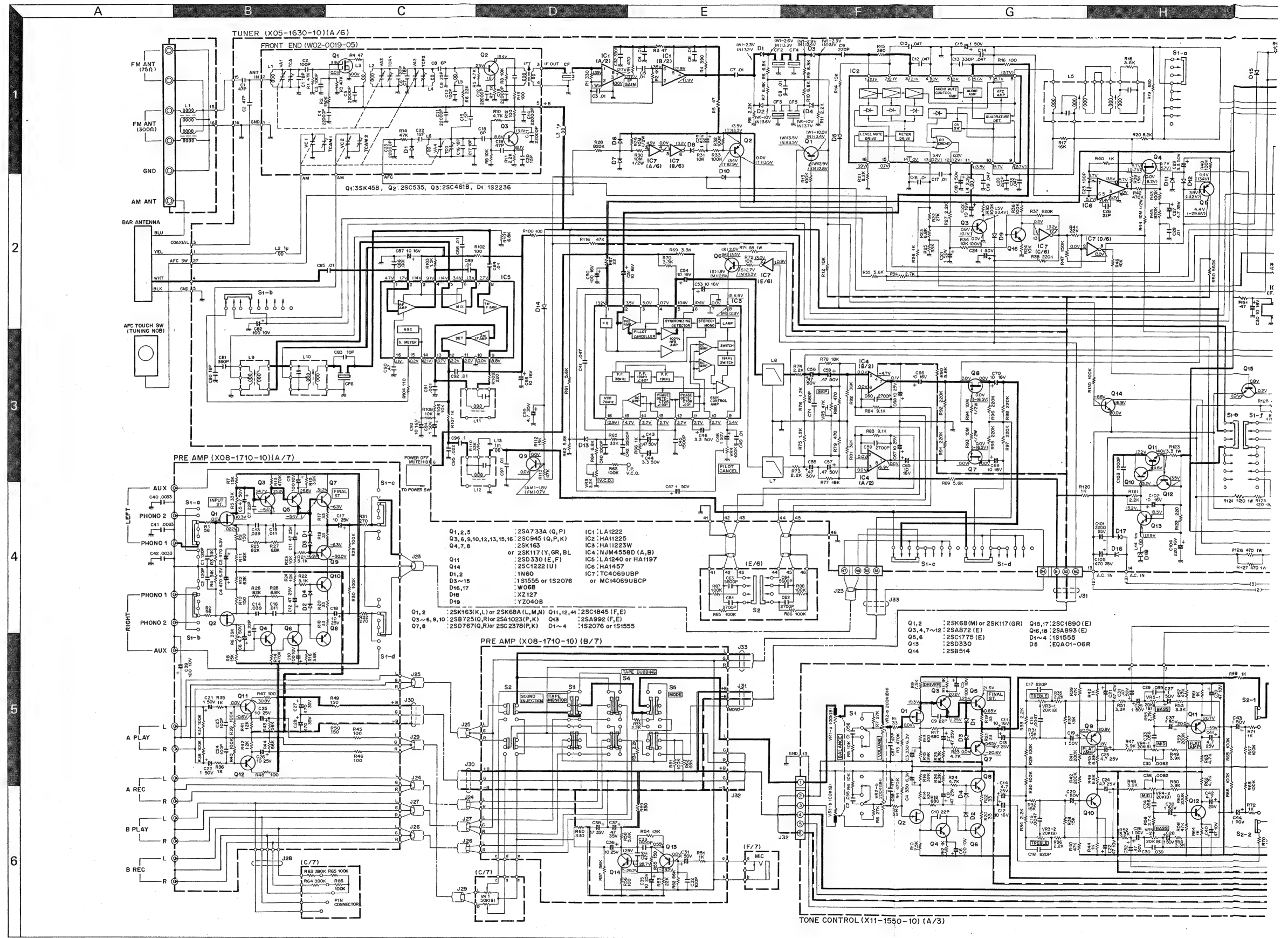
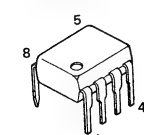
2SK68
2SK105
2SK117
2SK163

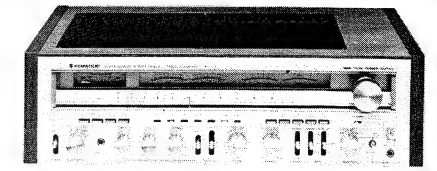


2SK150A
μPA68H



LA1222
NJM4558D
NJM4559D





POWER AMPLIFIER SECTION

Power Output

200 watts* per channel, minimum RMS both channels driven, at 8 ohms from 20 to 20,000 Hz with no more than 0.02% total harmonic distortion.

Both Channels Driven

into 8Ω at 1,000 Hz 210W + 210W
into 4Ω at 1,000 Hz 250W + 250W
Dynamic Power Output 600W at 8Ω
Total Harmonic Distortion (20 Hz to 20,000 Hz from AUX)
rated power into 8Ω 0.02%
1W power into 8Ω 0.007%
Intermodulation Distortion (60 Hz: 7 kHz = 4:1 SMPTE)
rated power into 8Ω 0.0045%
1W power into 8Ω 0.006%
Slew Rate ±110V/μsec
Rise Time 0.95 μsec
Frequency Response DC to 280,000 Hz - 3 dB
Signal to Noise Ratio
(A weighted) 115 dB
Damping Factor
(20 to 20 kHz at 8Ω) 50
Input Sensitivity/Impedance 1V/50 kΩ

PRE AMPLIFIER SECTION

Input Sensitivity/Impedance

PHONO 1, 2 2.5 mV/50 kΩ
AUX and TAPE 200 mV/50 kΩ
MIC 2.2 mV/50 kΩ
Signal to Noise Ratio (A weighted)
PHONO 1, 2 85 dB for 2.5 mV input
91 dB for 5.0 mV input
AUX and TAPE 110 dB for 200 mV input
MIC 74 dB for 2.2 mV input

Maximum Input Level

at 1,000 Hz 260 mV(RMS), T.H.D. 0.02%
Frequency Response
PHONO RIAA 20 Hz to 20,000 Hz ±0.2 dB
AUX and TAPE 5 Hz to 210,000 Hz - 3 dB

Tone Control

Bass ±12 dB at 100 Hz
(50 Hz Boost) ±10 dB at 50 Hz
Mid ±10 dB at 800 Hz
Treble ±12 dB at 10 kHz
Loudness Control
(VOL. -30 dB) 1 +8 dB at 100 Hz
2 +5 dB at 100 Hz

Subsonic Filter

18 Hz 6 dB/oct
High Filter 7 kHz 6 dB/oct
Output Level/Impedance
TAPE REC Out (Pin) 200 mV/300Ω
TAPE REC Out (DIN) 30 mV/80 kΩ
PRE Out 1.0V/1 kΩ

FM TUNER SECTION

Usable Sensitivity 9.8 dBf (1.7 μV)

50 dB Quieting Sensitivity

Mono 14.1 dBf (2.8 μV)
Stereo 36.1 dBf (35 μV)
Stereo Sensitivity
position 1 (S/N 40 dB) 25.2 dBf (10 μV)
position 2 (S/N 60 dB) 45.2 dBf (100 μV)

Signal to Noise Ratio at 65 dBf

Mono 83 dB
Stereo 78 dB
Total Harmonic Distortion
Mono 0.07%
Stereo 0.1%

Frequency Response

20 Hz to 15,000 Hz ±0.5 dB
Capture Ratio 1.0 dB
Image Rejection Ratio 105 dB
Spurious Response Ratio 115 dB
IF Response Ratio 105 dB

Alternate Channel Selectivity

WIDE 35 dB at 300 kHz
NARROW 60 dB at 300 kHz
AM Suppression Ratio 65 dB
Stereo Separation Ratio 50 dB at 1,000 Hz
40 dB at 50 Hz to 10,000 Hz

Subcarrier Product Ratio

73 dB
Antenna Impedance 300Ω Balanced and 75Ω unbalanced
FM Frequency Range 88 MHz to 108 MHz

AM TUNER SECTION

Usable Sensitivity 10 μV (250 μV/m)

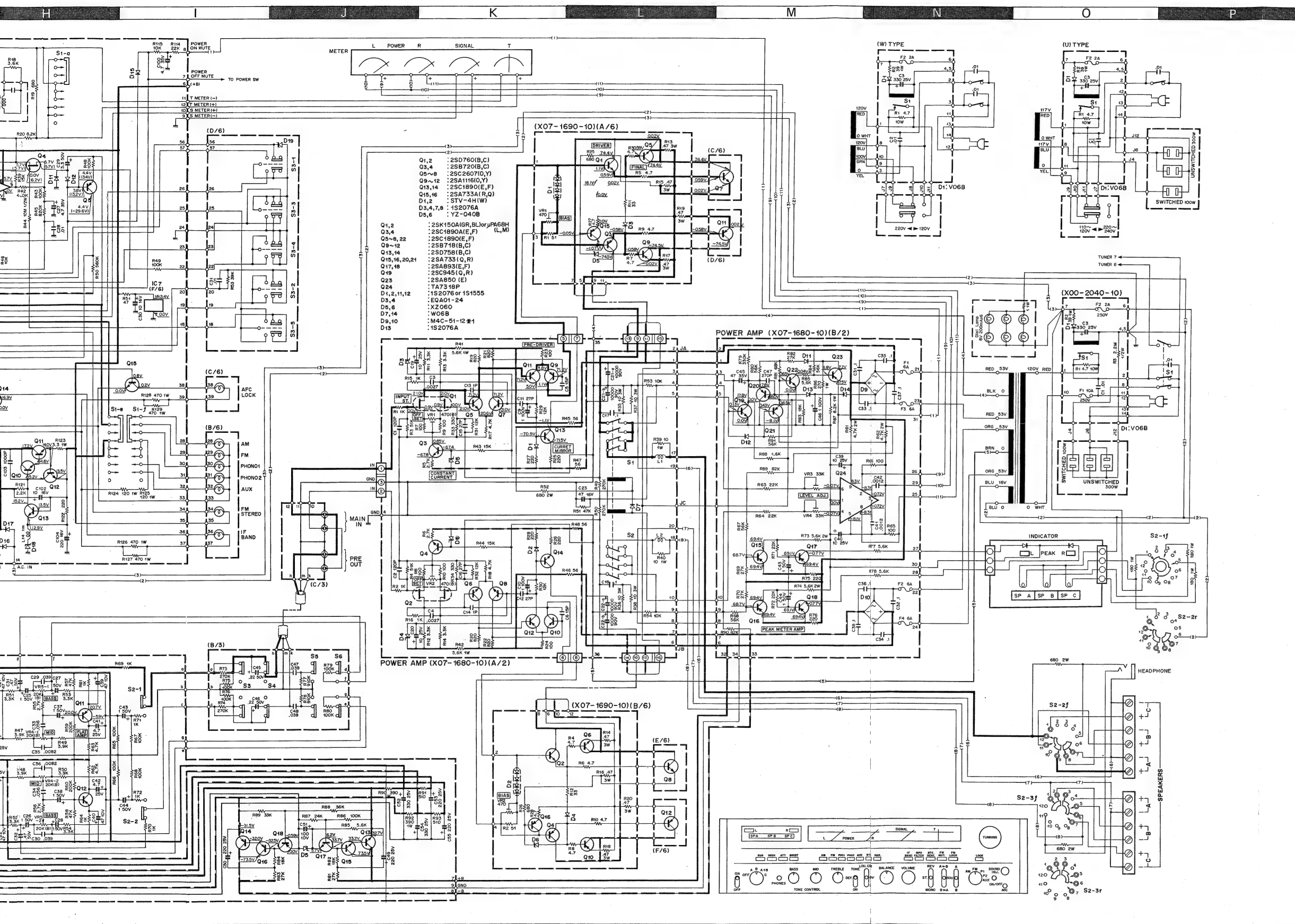
Signal to Noise Ratio

55 dB
Image Rejection 50 dB
Selectivity 45 dB

GENERAL

Power Consumption 1,200 watts at full power
AC Outlet Switched 1, Unswitched 2
Dimensions W: 602 mm (23-11/16") H: 177 mm (6-31/32")
D: 465 mm (18-5/16")
Weight (Net) 24.0 kg (52.9 lbs)
(Gross) 26.0 kg (57.3 lbs)

* Measured pursuant to Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifier in U.S.A.



PARTS LIST

See instructions at the end of the parts list.

Ref. No. 参照番号	Parts No. 部品番号	Description 部品名 / 規格	Re- marks 備考
KR-9050 (UNIT)			
1 2A	-	BOTTOM PLATE	
2 2A	-	METALLIC FRAME	
3 2A	-	CHASSIS	
4 3B	-	SUB PANEL	
5 1B	-	REAR PANEL	
6 2B	-	HOLDER	
7 3A, 3B	-	FASTENER	
8 2A, B	-	MOUNTING HARDWARE	
9 2A	-	PCB HOLDER	
10 2A	-	WIRE CRAMPER	
-	351-0003-14	DIAL CORD	
11 1A	A01-0352-02	CASE	*K
12 3A	A20-1402-03	FRONT PANEL	PU
12 3A	A20-1402-03	FRONT PANEL	MW
12 3A	A20-1402-03	FRONT PANEL	L
12 3A	A20-1402-03	FRONT PANEL	T
13 1A	A50-0059-02	SIDE PLATE (L)	*
14 1A	A50-0060-02	SIDE PLATE (R)	*
15 1A	A54-0169-02	WOOD TOP BOARD	*
-	B07-0235-04	ESCUTCHEON (LEVER)	*
-	B07-0262-04	ESCUTCHEON (KNOB)	*
-	B07-0263-04	ESCUTCHEON (KNOB)	*
-	B07-0265-04	ESCUTCHEON (KNOB)	*
-	B46-0055-20	WARRANTY CARD	P
-	B46-0060-00	WARRANTY CARD	T
-	B46-0061-20	WARRANTY CARD	K
-	B46-0062-20	WARRANTY CARD	U
-	B46-0063-00	WARRANTY CARD	U
-	B50-1845-00	INSTRUCTION MANUAL	*K
-	B50-1846-00	INSTRUCTION MANUAL	PM
-	B50-1847-00	INSTRUCTION MANUAL	T
16 1A	B04-0065-02	MESH PLATE	*K
16 1A	B04-0065-02	MESH PLATE	PU
16 1A	B04-0065-02	MESH PLATE	M
16 1A	B04-0066-02	MESH PLATE	*T
16 1A	B04-0066-02	MESH PLATE	WL
17 3A	B08-2018-04	INDICATOR	*
18 3A	B10-0244-04	FRONT GLASS	*
19 3B	B11-0002-03	FILTER	*
20 3A	B20-0442-03	DIAL CALIBRATIONS	*
21 3A	B21-0032-04	DIAL POINTER	*
22 3A	B30-0084-05	LAMP	*
23 3B	B30-0179-05	LAMP	*
24 3A	B30-0181-05	LED	*
25 3B	B31-0299-05	METER	*
26 3A	B38-0008-04	DISPLAY ASSY	*
27 2B	C54-3310-39	CERAMIC 0.01UF DC2KV	TW
27 2B	C54-3310-39	CERAMIC 0.01UF DC2KV	L
27 2B	C90-0145-05	FILM 0.01UF AC125V	K
27 2B	C91-0023-05	CERAMIC 0.01UF AC250V	UM
27 2B	C91-0072-05	FILM 0.01UF AC125V	P
-	D32-0075-04	STOPPER (P. VOLT. SELECT)	UM
-	D32-0075-04	STOPPER (P. VOLT. SELECT)	WL
28 2A, 3B	D15-0170-14	PULLEY	
29 2B	D15-0171-13	PULLEY	
30 3B	D20-0147-04	DIAL SHAFT	*
31 1B	E04-0004-05	RECEPTACLE (FM ANT.)	TW
31 1B	E04-0004-05	RECEPTACLE (FM ANT.)	L
32 2B	E11-0060-15	PHONE JACK	
33 1B	E20-0813-05	TERMINAL BOARD	KP
34 1B	E30-0290-05	POWER CORD	UM
34 1B	E30-0515-05	POWER CORD	W
34 1B	E30-0580-05	POWER CORD	
34 1B	E30-0585-05	POWER CORD	L
34 1B	E30-0602-05	POWER CORD	T
35 2B	G01-0045-24	COIL SPRING	*
36 3A	G01-0364-04	COIL SPRING	*
37 3A	G01-0365-04	COIL SPRING	*
38 2B, 3B	G10-0017-04	DUST SEET	
-	H01-3001-04	CARTON BOX	*K
-	H01-3001-04	CARTON BOX	UM
-	H01-3002-04	CARTON BOX	*P
-	H01-3003-04	CARTON BOX	*T
-	H01-3052-04	CARTON BOX	*W
-	H01-3052-04	CARTON BOX	L
-	H10-1528-02	POLYSTYRENE FIXTURE	*
-	H10-1529-02	POLYSTYRENE FIXTURE	*
-	H20-0443-04	COVER	*M
-	H20-0449-04	COVER	*K
-	H20-0449-04	COVER	PU
-	H20-0449-04	COVER	TW
-	H20-0449-04	COVER	L
-	H25-0078-04	BAG	KP
-	H25-0078-04	BAG	UM
-	H25-0078-04	BAG	T
-	J12-0010-04	SHORT PIN	*
39 2A	J02-0101-05	FOOT	*
40 3B	J32-0249-04	BOSS	*
41 3A	J32-0250-04	BOSS	*
42 1B	J41-0024-15	POWER CORD BUSHING	TL
42 1B	J41-0033-05	POWER CORD BUSHING	KP
42 1B	J41-0033-05	POWER CORD BUSHING	UM
42 1B	J41-0033-05	POWER CORD BUSHING	W
43 3A	J90-0092-03	RAIL	*
44 3A	K23-0320-04	KNOB (TUNING)	*
45 3A	K23-0321-04	KNOB (SP. SEL. VOL. BAL.)	*
46 3A	K23-0322-04	KNOB (TONE)	*
47 3A	K23-0323-04	KNOB (MIC)	*
48 3A	K27-0070-04	KNOB (LEVER)	*
49 3A	K29-0307-04	KNOB (PUSH)	*
50 3A	K29-0308-04	KNOB (PUSH)	*
51 2A	L01-1741-05	POWER TRANSFORMER	*K
51 2A	L01-1742-05	POWER TRANSFORMER	*T
51 2A	L01-1745-05	POWER TRANSFORMER	*U
51 2A	L01-1745-05	POWER TRANSFORMER	M
51 2A	L01-1746-05	POWER TRANSFORMER	*W
51 2A	L01-1746-05	POWER TRANSFORMER	L
51 2A	L01-1747-05	POWER TRANSFORMER	*P
52 2A, 3B	N09-0293-05	SCREW (PULLEY)	*
53 1B	N09-0303-05	SCREW	
54 1A	N09-0306-05	SCREW (MESH PLATE)	
55 1A, 1B	N08-0127-05	DRESSED SCREW (CASE)	
56 1B	N08-0128-35	DRESSED SCREW (GND)	
57 3A	N14-0074-05	NUT	
58 3A	N29-0033-05	FASTENER	
R1	R47-5418-15	FL-PROOF RS180	J 3A
R2	R47-5568-15	FL-PROOF RS680	J 3D

PARTS LIST

Ref. No. 参照番号	Parts No. 部品番号	Description 部品名 / 規格	Re- marks 備考
59 3B	S90-0001-05	REMOTE SW. SHAFT	
60 3B	S90-0015-05	REMOTE WIRE	*
61 2A	S33-4012-05	LEVER SWITCH S1	KP
61 2A	S33-4013-05	LEVER SWITCH S1	TW
61 2A	S33-4013-05	LEVER SWITCH S1	L
61 2A	S33-4014-05	LEVER SWITCH S1	UM
62 2B	S01-3026-05	ROTARY SWITCH S2	
-	T90-0202-05	ANTENNA (FM)	
63 1B	T90-0083-05	ANTENNA (AM)	
64 1A	X00-2040-10	POWER SUPPLY PCB ASSY	*K
64 1A	X00-2040-51	POWER SUPPLY PCB ASSY	*T
64 1A	X00-2040-61	POWER SUPPLY PCB ASSY	*W
64 1A	X00-2040-61	POWER SUPPLY PCB ASSY	L
64 1A	X00-2040-81	POWER SUPPLY PCB ASSY	*U
64 1A	X00-2040-81	POWER SUPPLY PCB ASSY	M
64 1A	X00-2041-01	POWER SUPPLY PCB ASSY	*P
65 2B, 3B	X05-1630-10	TUNER PCB ASSY	*K
65 2B, 3B	X05-1630-10	TUNER PCB ASSY	P
65 2B, 3B	X05-1630-11	TUNER PCB ASSY	*U
65 2B, 3B	X05-1630-11	TUNER PCB ASSY	MT
65 2B, 3B	X05-1630-11	TUNER PCB ASSY	WL
66 2B	X07-1680-10	POWER AMP PCB ASSY	*K
66 2B	X07-1680-10	POWER AMP PCB ASSY	PU
66 2B	X07-1680-10	POWER AMP PCB ASSY	M
66 2B	X07-1680-61	POWER AMP PCB ASSY	*T
66 2B	X07-1680-61	POWER AMP PCB ASSY	WL
67 1A	X07-1690-10	POWER AMP PCB ASSY	*
68 2B, 3B	X08-1710-10	PRE AMP PCB ASSY	*
69 1B, 2B	X11-1550-10	TONE AMP PCB ASSY	*
POWER SUPPLY (X00-2040)			
C1	C90-0145-05	CAPACITOR 0.01UF AC125V	K
C1	C91-0023-05	CERAMIC 0.01UF AC250V	UM
C1	C91-0072-05	FILM 0.01UF AC125V	P
C3	C24-1433-71	ELECTRO 330UF 25WV	
-	E03-0008-05	AC OUTLET	PK
-	E03-0008-05	AC OUTLET	U
F1	F05-1032-05	FUSE (10A)	KP
F2	F05-2021-05	FUSE (2A)	KP
F2	F05-2023-05	FUSE (2A)	UM
-	J13-0055-05	FUSE HOLDER	
R1	R92-0199-05	CEMENT 4.7 J 4A	*
R2	R47-1439-05	FL-PROOF RS39 J 3A	
R3	R92-0173-05	RC 2.2M J 2H	KP
101 2A	S51-1023-05	RELAY S1	
102 1B	S31-2001-05	SLIDE SWITCH S2	UM
102 1B	S31-2001-05	SLIDE SWITCH S2	WL
D1	V11-0219-05	V06B	
TUNER (X05-1630)			
103 2B, 3B	B30-0084-05	LAMP	
C1 , 2	C71-1747-05	CERAMIC 47PF J	
C3 -8	C55-1710-38	CERAMIC 0.01UF Z	
C9	C71-1722-15	CERAMIC 220PF J	
C10	C55-1747-38	CERAMIC 0.047UF Z	
C12	C55-1747-38	CERAMIC 0.047UF Z	
C13	C71-1733-15	CERAMIC 330PF J	
C14	C55-1747-38	CERAMIC 0.047UF Z	
C15	C24-1710-51	ELECTRO 1UF 50WV	
C16 , 17	C55-1710-38	CERAMIC 0.01UF Z	
C18	C24-1710-51	ELECTRO 1UF 50WV	
C19	C55-1747-38	CERAMIC 0.047UF Z	
C20	C71-1722-15	CERAMIC 220PF J	
C21	C24-1710-51	ELECTRO 1UF 50WV	
C22	C24-1210-61	ELECTRO 10UF 16WV	
C23 , 24	C24-1710-51	ELECTRO 1UF 50WV	
C25	C71-1710-15	CERAMIC 100PF J	
C26	C71-1722-05	CERAMIC 22PF J	
C27	C24-6547-51	ELECTRO 4.7UF 35WV	
C28	C55-1710-38	CERAMIC 0.01UF Z	
C29	C24-1733-51	ELECTRO 3.3UF 50WV	
C30	C24-1210-61	ELECTRO 10UF 16WV	
C31	C46-1710-36	MYLAR 0.01UF K	
C32	C71-1733-15	CERAMIC 330PF J	
C33	C55-1747-38	CERAMIC 0.047UF Z	
C40	C48-1710-25	POLYSTY 1000PF J	
C41	C46-1747-36	MYLAR 0.047UF K	
C42	C52-1722-26	CERAMIC 0.0022UF K	
C43	C25-1747-47	LL-ELEC 0.47UF 50WV	
C44	C25-1733-57	LL-ELEC 3.3UF 50WV	
C45	C52-1715-26	CERAMIC 0.0015UF K	
C46	C25-1733-57	LL-ELEC 3.3UF 50WV	
C47 , 48	C24-1710-51	ELECTRO 1UF 50WV	
C49	C46-1710-36	MYLAR 0.01UF K	
C50	C24-1210-71	ELECTRO 100UF 16WV	
C51	C24-1210-61	ELECTRO 10UF 16WV	
C53 , 54	C24-1210-61	ELECTRO 10UF 16WV	
C55 -58	C25-1747-47	LL-ELEC 0.47UF 50WV	
C59 -62	C46-1727-25	MYLAR 0.0027UF J	
C63 , 64	C46-1756-25	MYLAR 0.0056UF J	
C65 , 66	C24-1210-61	ELECTRO 10UF 16WV	
C67 , 68	C24-1410-61	ELECTRO 10UF 25WV	
C69 , 70	C24-1210-61	ELECTRO 10UF 16WV	
C71	C52-1768-16	CERAMIC 680PF K	
C80	C70-1718-05	CERAMIC 18PF J	
C81	C48-1736-15	POLYSTY 360PF J	
C82	C24-1010-71	ELECTRO 100UF 10WV	
C83	C71-1710-02	CERAMIC 10PF D	
C84 , 85	C90-0245-05	CERAMIC 0.01UF M	
C86	C52-1710-26	CERAMIC 0.001UF K	
C87	C24-1210-61	ELECTRO 10UF 16WV	
C88 , 89	C90-0245-05	CERAMIC 0.01UF M	
C90	C55-1747-38	CERAMIC 0.047UF Z	
C91	C52-1710-26	CERAMIC 0.001UF K	
C92	C90-0245-05	CERAMIC 0.01UF M	
C93	C24-1210-61	ELECTRO 10UF 16WV	
C94	C24-1710-51	ELECTRO 1UF 50WV	
C95	C90-0253-05	CERAMIC 0.022UF M	
C96	C46-1710-47	MYLAR 0.1UF M	
C97	C90-0245-05	CERAMIC 0.01UF M	
C98	C24-1210-61	ELECTRO 10UF 16WV	
C99 , 100	C24-6547-51	ELECTRO 4.7UF 35WV	
C101	C24-1422-81	ELECTRO 2200UF 25WV	
C102	C24-1210-61	ELECTRO 10UF 16WV	
C103	C52-1710-26	CERAMIC 0.001UF K	
C104	C24-1222-71	ELECTRO 220UF 16WV	
C105	C24-1447-71	ELECTRO 470UF 25WV	
104 1B	E29-0082-05	TERMINAL BOARD	
-	L79-0085-05	FILTER ASSY (CF1-CF5, FM)	*
CF6	L72-0075-05	CERAMIC FILTER (AM)	
L1	L19-0021-05	BALUN TRANSFORMER	
L2 , 3			L
L4			L
L5			L
L7 , 8			L
L9			L
L10			L
L11			L
L12			L
L13 , 14			L
R5			F
R18			F
R29 , 30			F
R44			F
R51			F
R67			F
R71			F
R93 , 94			F
R100			F
R123			F
R124, 125			F
R126-129			F
VR1			F
VR3			F
VR4			F
VR5			R
105 2B			S
106 1B			S
107 3B			S
D1 , 2			V
D3 -15			V
D16 , 17			V
D18			V
D19			V
IC1			V
IC2			V
IC3			V
IC4			V
IC5			V
IC6			V
IC7			V
Q1 , 2			V
Q3			V
Q4			V
Q5			V
Q6			V
Q7 , 8			V
Q9 , 10			V

PARTS LIST

Ref. No. 参照番号	Parts No. 部品番号	Description 部品名 / 規格	Re- marks 備考
L2 ,3 L4 L5 L7 ,8 L9	L40-1092-44 L40-2292-44 L30-0322-05 L79-0071-15 L32-0205-15	INDUCTOR 1UH INDUCTOR 2.2UH IFT (FM) FILTER OSCILLATING COIL (AM)	*
L10 L11 L12 L13 ,14	L30-0321-05 L30-0284-05 L79-0073-05 L40-1021-45	IFT (AM) IFT (AM) FILTER INDUCTOR 1MH	*
R5 R18 R29 ,30 R44 R51	R43-1247-05 R48-2360-14 R40-8310-68 R40-8310-68 R43-1247-05	FL-PROOF RD47 J 2E RN 3.6K G 2E RC 10M M 2H RC 10M M 2H FL-PROOF RD47 J 2E	
R67 R71 R93 ,94 R100 R123	R43-1222-05 R47-6468-05 R40-8310-68 R43-1210-15 R47-6433-95	FL-PROOF RD22 J 2E FL-PROOF RS68 J 3A RC 10M M 2H FL-PROOF RD100 J 2E FL-PROOF RS3.3 J 3A	
R124,125 R126-129 VR1 VR3 VR4	R47-6412-15 R47-6447-15 R12-0065-05 R12-1041-05 R12-5030-05	FL-PROOF RS120 J 3A FL-PROOF RS470 J 3A TRIMMING POT. 470 TRIMMING POT. 3.3K TRIMMING POT. 100K	
VR5	R12-3046-05	TRIMMING POT. 47K	
105 2B 106 1B 107 3B	S90-0016-05 S31-2048-05 S42-5013-05	SLIDE SWITCH S1 SLIDE SWITCH S2 PUSH SWITCH S3-S7	*
D1 ,2 D3 -15 D16 ,17 D18 D19	V11-0051-05 V11-0076-05 V11-0295-05 V11-4101-80 V11-4104-60	1N60 1S1555 W06B XZ-127 YZ-040B	
IC1 IC2 IC3 IC4 IC5	V30-0215-05 V30-0321-10 V30-0266-20 V30-0217-05 V30-0245-10	LA1222 HA11225 HA11223W NJM4558D(A,B) LA1240	*
IC6 IC7 Q1 ,2 Q3 Q4	V30-0264-10 V30-0297-20 V01-0733-40 V03-0945-40 V09-0126-60	HA1457 TC4069UBP 2SA733A(Q,P) 2SC945(Q,P,K) 2SK117(Y,GR,BL)	
Q5 Q6 Q7 ,8 Q9 ,10 Q11	V01-0733-40 V03-0945-40 V09-0126-60 V03-0945-40 V04-0330-20	2SA733A(Q,P) 2SC945(Q,P,K) 2SK117(Y,GR,BL) 2SC945(Q,P,K) 2SD330(E,F)	
Q12 ,13 Q14 Q15 ,16	V03-0945-40 V03-0416-05 V03-0945-40	2SC945(Q,P,K) 2SC1222(U) 2SC945(Q,P,K)	
108 2B	W02-0019-05	FM FRONT END	
POWER AMP (X07-1680)			
109 2B 109 2B C1 ,2 C3 ,4 C5 ,6	C90-0403-05 C90-0403-05 C71-1712-15 C46-1727-25 C71-1715-05	ELECTRO 10000UF 90WV ELECTRO 10000UF 90WV CERAMIC 120PF J MYLAR 0.0027UF J CERAMIC 15PF J	*
C9 ,10 C11 ,12	C24-2010-51 C71-1727-05	ELECTRO 1UF 100WV CERAMIC 27PF J	

PARTS LIST

Ref. No. 参照番号	Parts No. 部品番号	Description 部品名 / 規格	Re- marks 備考
-	E02-0004-05	SOCKET	
112 2A 112 2A	F01-0306-04 F01-0305-03 F01-0310-03	HEAT SINK HEAT SINK HEAT SINK	*
R3 -10 R11 ,12 R13 -20 R27 ,28 VR1 ,2	R43-1247-95 R43-1233-05 R92-0111-05 R43-1247-95 R12-0072-05	FL-PROOF RD4.7 J 2E FL-PROOF RD33 J 2E METAL 0.47 J 3F FL-PROOF RD4.7 J 2E TRIMMING POT. 470	*
D1 ,2 D3 ,4 D5 ,6 D7 ,8 Q1 ,2	V11-5100-10 V11-0273-05 V11-4104-60 V11-0273-05 V04-0760-10	STV-4H(W) 1S2076A YZ-040B 1S2076A 2SD760(B,C)	*
Q3 ,4 Q5 -8 Q9 -12 Q13 ,14 Q15 ,16	V02-0720-10 V03-2607-00 V01-1116-00 V03-1890-20 V01-0733-30	2SB720(B,C) 2SC2607 2SA1116 2SC1890(E,F) 2SA733A(R,Q)	*
PRE AMP (X08-1710)			
C1 ,2 C3 ,4 C5 ,6 C7 ,8 C9 ,10	C71-1712-15 C24-0847-71 C24-1747-51 C71-1722-05 C24-1010-71	CERAMIC 120PF J ELECTRO 470UF 6.3WV ELECTRO 4.7UF 50WV CERAMIC 22PF J ELECTRO 100UF 10WV	
C11 ,12 C13 ,14 C15 ,16 C17 ,18 C21 ,22	C24-1447-61 C49-2039-34 C49-2011-34 C24-1410-61 C25-1710-57	ELECTRO 47UF 25WV MYLAR 0.039UF G MYLAR 0.011UF G ELECTRO 10UF 25WV LL-ELEC 1UF 50WV	
C23 ,24 C25 ,26 C27 ,28 C31 C32	C71-1710-15 C24-1410-61 C24-6547-71 C25-1710-57 C71-1710-15	CERAMIC 100PF J ELECTRO 10UF 25WV ELECTRO 470UF 35WV LL-ELEC 1UF 50WV CERAMIC 100PF J	
C33 C34 C35 C36 C37 ,38	C52-1715-26 C71-1747-05 C24-1410-61 C25-1410-67 C24-6547-61	CERAMIC 0.0015UF K CERAMIC 47PF J ELECTRO 10UF 25WV LL-ELEC 10UF 25WV ELECTRO 47UF 35WV	
C39 C40 -42	C24-1010-71 C53-1733-27	ELECTRO 100UF 10WV CERAMIC 0.0033UF M	
113 1B 114 3B 115 2B 116 2B	E06-0510-05 E11-0065-05 E13-0417-15 E13-0611-15	DIN CONNECTOR PHONE JACK (MIC) PHONE JACK PHONE JACK	
117 3B R17 -20 R25 ,26 R27 ,28 R49 ,50	R06-4032-05 R43-1233-05 R48-2820-24 R48-2680-14 R43-1215-15	POT. METER 50K(B)X2 VR1 FL-PROOF RD33 J 2E RN 82K G 2E RN 6.8K G 2E FL-PROOF RD150 J 2E	
R59 ,60	R43-1233-15	FL-PROOF RD330 J 2E	
118 2B 119 3B 120 3B 121 3B	S90-0003-05 S40-4027-05 S33-4018-05 S33-4022-05	SLIDE SWITCH S1 PUSH SWITCH S2 LEVER SWITCH S3,4 LEVER SWITCH S5	*
D1 -4 Q1 ,2 Q3 -6 Q7 ,8	V11-0271-05 V09-0144-30 V02-0725-00 V04-0767-00	1S2076 2SK163(K,L) 2SB725 2SD767	*

Ref. No. 参照番号	Parts No. 部品番号	Description 部品名 / 規格	Re- marks 備考
Q9 ,10 Q11 ,12 Q13 Q14	V02-0725-00 V03-1845-10 V01-0992-10 V03-1845-10	2SB725 2SC1845(F,E) 2SA992(F,E) 2SC1845(F,E)	
TONE AMP (X11-1550)			
C1 ,2 C3 ,4 C5 ,6 C7 ,8 C9 ,10	C46-1756-35 C24-0833-71 C24-1010-71 C24-1447-61 C71-1722-05	MYLAR 0.056UF J ELECTRO 330UF 6.3WV ELECTRO 100UF 10WV ELECTRO 47UF 25WV CERAMIC 22PF J	
C11 ,12 C13 ,14 C15 ,16 C17 ,18 C19 ,20	C25-1210-67 C25-1447-57 C46-1747-25 C52-1782-16 C25-1710-57	LL-ELEC 10UF 16WV LL-ELEC 4.7UF 25WV MYLAR 0.0047UF J CERAMIC 820PF K LL-ELEC 1UF 50WV	
C21 ,22 C23 ,24 C25 -28 C29 ,30 C31 ,32	C24-1047-61 C25-1447-57 C25-1710-57 C46-1739-35 C25-1747-47	ELECTRO 47UF 10WV LL-ELEC 4.7UF 25WV LL-ELEC 1UF 50WV MYLAR 0.039UF J LL-ELEC 0.47UF 50WV	
C33 ,34 C35 ,36 C37 ,38 C39 ,40 C41 ,42	C46-1756-35 C46-1782-25 C25-1710-57 C24-1047-61 C25-1447-57	MYLAR 0.056UF J MYLAR 0.0082UF J LL-ELEC 1UF 50WV ELECTRO 47UF 10WV LL-ELEC 4.7UF 25WV	
C43 ,44 C45 ,46 C47 ,48 C49 ,50 C51	C25-1710-57 C25-1722-47 C46-1739-35 C24-1422-71 C24-1010-71	LL-ELEC 1UF 50WV LL-ELEC 0.22UF 50WV MYLAR 0.039UF J ELECTRO 220UF 25WV ELECTRO 100UF 10WV	
C52 C53 C54 C55 C57 ,58	C24-1433-71 C24-1422-71 C24-1433-71 C24-1422-71 C71-1747-05	ELECTRO 330UF 25WV ELECTRO 220UF 25WV ELECTRO 330UF 25WV ELECTRO 220UF 25WV CERAMIC 47PF J	
122 1B	E13-0422-05	PHONO JACK	*
-	F01-0294-04	HEAT SINK	
123 2B 124 2B 125 2B R90 R92	R08-5042-05 R08-5041-05 R06-3018-05 R47-1439-15 R47-1439-15	POT. METER 200K(BH) VR1 POT. METER 100K(B)X2VR2 POT. METER 20K(B) VR3-5 FL-PROOF RS390 J 3A FL-PROOF RS390 J 3A	*
126 2B 127 2B 128 2B	S33-2034-05 S33-2049-05 S42-4009-05	LEVER SWITCH S1 LEVER SWITCH S2 PUSH SWITCH S3-6	*
D1 -4 D5 Q1 ,2 Q3 ,4 Q5 ,6	V11-0076-05 V11-0339-05 V09-0122-20 V01-0189-05 V03-1775-06	1S1555 EGA01-06(R) 2SK68(M) 2SA872(E) 2SC1775(E)	
Q7 -12 Q13 Q14 Q15 Q16	V01-0189-05 V04-0330-00 V02-0514-00 V03-1890-70 V01-0893-60	2SA872(E) 2SD330 2SB514 2SC1890(E) 2SA893(E)	
Q17 Q18	V03-1890-70 V01-0893-60	2SC1890(E) 2SA893(E)	

PARTS LIST

Fig. No.	Parts No.
M3 × 6	N30-3006-46
M3 × 6 BLK	N30-3006-45
M3 × 6 (F-Tap) BLK	N88-3006-45
M3 × 8 BLK	N30-3008-45
M3 × 8 (Br-Tap)	N87-3008-46
M3 × 8 (F-Tap)	N88-3008-46
M3 × 8 (Bi-Tap) BLK	N89-3008-45
M3 × 8 (Tp-T)	N91-3008-46
M3 × 10 (Br-Tap)	N87-3010-46
M3 × 10 (F-Tap)	N88-3010-46
M4 × 10 (Br-Tap)	N87-4010-46

INSTRUCTIONS FOR PARTS LIST

Ref. No. 参照番号	Parts No. 部品番号	Description 部品名 / 規格	Re- marks 備考
①	11 1A	A01-0352-02 CASE	*K
②	12 3A	A20-1402-03 FRONT PANEL	PU
	12 3A	A20-1402-03 FRONT PANEL	MW
	12 3A	A20-1402-03 FRONT PANEL	L
	12 3A	A20-1403-03 FRONT PANEL	T
	13 1A	A50-0059-02 SIDE PLATE (L)	*
	14 1A	A50-0060-02 SIDE PLATE (R)	*
	15 1A	A54-0169-02 WOOD TOP BOARD	*
⑤	C31 -38	C91-0039-05 MYLAR 0.1UF J	
	C39 ,40	C24-1410-61 ELECTRO 10UF 25WV	
	C41 ,42	C46-1712-26 MYLAR 0.0012UF K	
	C43 ,44	C24-1710-51 ELECTRO 1UF 50WV	
	C45	C25-6547-67 ELECTRO 47UF 35WV	
	C46	C24-2010-51 ELECTRO 1UF 100WV	
	C47	C71-1727-15 CERAMIC 270FF J	
	110 2B	F05-6024-05 FUSE (6A) F1-4	KP
	110 2B	F05-6024-05 FUSE (6A) F1-4	UM
	110 2B	F05-6322-05 FUSE (6.3A) F1-4	TW
	110 2B	F05-6322-05 FUSE (6.3A) F1-4	L
	111 2B	J13-0055-05 FUSE HOLDER	
	L1 ,2	L39-0085-05 COIL	
	R5 ,6	R43-1227-25 FL-PROOF RD2.7K J 2E	
	R17 ,18	R43-1247-25 FL-PROOF RD4.7K J 2E	
	R23 ,24	R43-1210-15 FL-PROOF RD100 J 2E	
	R25 -28	R43-1222-15 FL-PROOF RD220 J 2E	
	R29 ,30	R47-1412-35 FL-PROOF RS12K J 3A	

- ① Exploded view drawing No.
- ② Position in exploded view.
- ③ Symbol of new parts.
- ④ Area to which parts are shipped. Example: A20-1402-03 is the parts No. of FRONT PANEL ASS'Y for the "K" type products (for USA). When this column is blank, it means that the same type of parts (same parts No.) are used for the products shipped to all areas.
- ⑤ Reference No. in schematic diagram.
- ⑥ Abbreviation of "ceramic capacitor". All capacitors and resistors are listed using abbreviations.

⑦ Abbreviations

- * Abbreviations of capacitors (Parts No. with initial letter "C")

ELECTRO	Electrolytic capacitor
LL-ELEC	Low leak electrolytic capacitor
NP-ELEC	Non-pole electrolytic capacitor
MICA	Mica capacitor
POLYSTY	Polystyrene capacitor
MYLAR	Mylar capacitor
CERAMIC	Ceramic capacitor
TANTAL	Tantalum capacitor
MF	Metallized film capacitor
OIL	Oil capacitor

The unit "UF" is used in lieu of "μF".

- * Abbreviations of resistors (Parts No. with initial letters "R").

RC	Carbon composition resistor
RD	Carbon film resistor
FL-PROOF RD	Flame-proof carbon film resistor
RW	Wire wound power resistor
FL-PROOF RS	Flame-proof metal oxide film resistor
RN	Metal film resistor
2B	Rated wattage 1/8W
2E	Rated wattage 1/4W
2H	Rated wattage 1/2W
3A	Rated wattage 1W
3D	Rated wattage 2W
3F	Rated wattage 3W
3G	Rated wattage 4W
3H	Rated wattage 5W

All resistor values are indicated with the unit (Ω) omitted.

- * Abbreviations common to capacitors and resistors.

C	±0.25 pF (Used for capacitors only)
D	±0.5 pF (Used for capacitors only)
F	±1%
G	±2%
J	±5%
K	±10%
M	±20%
Z	+80%, -20% (Used for capacitors only)
P	+100%, -0% (Used for capacitors only)

- ⑧ Resistors RD (carbon composition resistors) are not listed in the parts list. For values, refer to the schematic diagram.

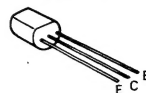
SEMICONDUCTOR SUBSTITUTIONS

Ref. No.	Name	Substitutions
X05-1630-10 (-11)		
IC1	LA1222	—
IC2	HA11225	—
IC3	HA11223W	—
IC4	NJM4558D (A,B)	NJM4559D
IC5	LA1240	HA1197
IC6	HA1457	—
IC7	TC4069UBP	MC14069BCP
Q1,2,5	2SA733A(Q,P)	2SA640, 2SA750
Q3,6,9,10, 12,13, 15,16	2SC945(Q,P,K)	2SC1980(S,T), 2SC1845(F,E)
Q4,7,8	2SK117(Y,GR,BL)	2SK105, 2SK163
Q11	2SD330(E,F)	2SC1419, 2SD313-AL
Q14	2SC1222(U)	2SC1775, 2SC1980
X07-1680-10 (-61)		
Q1,2	2SK150A(GR,BL)	μPA68H(L,M)
Q3,4	2SC1890A(E,F)	2SC1775A, 2SC1439
Q5~8,22	2SC1890(E,F)	2SC1775, 2SC2089
Q9~12	2SB718(B,C)	—
Q13,14	2SD758(B,C)	—
Q15,16	2SA733A(R,Q)	2SA640, 2SA750
20,21	—	—
Q17,18	2SA893(E,F)	2SA872
Q19	2SC945(R,Q)	2SC1980(S,T), 2SC1845(F,E)
Q23	2SA850(E)	2SA794
Q24	TA7138P	—
X07-1690-10		
Q1,2	2SD760(B,C)	—
Q3,4	2SB720(B,C)	—
Q5~8	2SC1607(O,Y)	—
Q9~12	2SA1116(O,Y)	—
Q13,14	2SC1890(E,F)	2SC1775, 2SC1089
Q15,16	2SA733A(A)(R,Q)	2SA640, 2SA750
X08-1710-10		
Q1,2	2SK163(K,L)	2SK68A(L,M,N)
Q3~6, 9,10	2SB725	2SA1023(P,K), 2SA777, 2SA850
Q7,8	2SD767	2SC2378(P,K), 2SC1509, 2SC1735
Q11,12,14	2SC1845(F,E)	2SC1890, 2SC2008
Q13	2SA992(F,E)	2SA872
X11-1550-10		
Q1,2	2SK68(M)	2SK117(GR), 2SK105
Q3,4, 7~12	2SA872(E)	2SA992
Q5,6	2SC1775(E)	2SC1890, 2SC2089
Q13	2SD330	2SC1419, 2SD313V-AL
Q14	2SB514	2SB507V-AL
Q15,17	2SC1890(E)	2SC1775, 2SC2089
Q16,18	2SA893(E)	2SA872

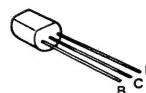
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2SA750
2SA777
2SA872
2SA893
2SA992

2SB725
2SC945
2SC1222
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2SC1735
2SC1775

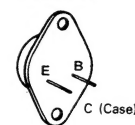
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2SD767



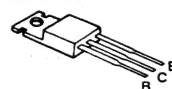
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2SA850



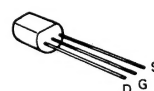
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2SC2607



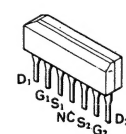
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2SB514
2SB720
2SC1419
2SD330
2SD313V-AL
2SD760



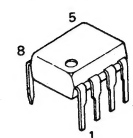
2SK68
2SK105
2SK117
2SK163



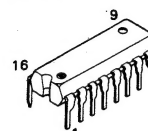
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μPA68H



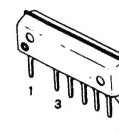
LA1222
NJM4558D
NJM4559D



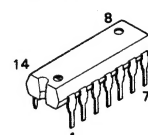
HA11223W
HA11225
HA1197
LA1240



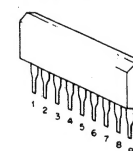
HA1457



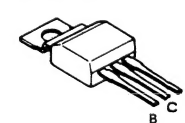
TC4069UBP
MC14069UBCP



TA7318P



2SB718
2SD758



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